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ASTOR, LENOX AND
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Copper Manual

COPPER MINES,
COPPER STATISTICS, COPPER SHARES

AND

A Summary of Information on Copper, Etc.

BY

D. HOUSTON & CO.
METAL BROKERS
NEW YORK

.... VOLUME NUMBER 3 ....

D. HOUSTON & CO., Publishers
New York

1904

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PREFACE.

The remarkable progress made in the development of copper mining during recent years marks an era of wonderful expansion and success in this department of productive industry. The great copper fields of this country are now furnishing the world with more than 50 per cent of the globe's copper supplies, and the technical and economic sides of mining have been more thoroughly mastered than ever before. The wonderful mineral wealth of the United States is one of the greatest factors in its material prosperity, and no one can study the operations at American copper mines without being impressed with their great value and importance to the nation.

It is a gratification, therefore, to be able to present to the public another volume of the "Copper Manual" containing a record of events occurring at the copper centres. Nearly six years have elapsed since the first "Copper Manual" was published, and almost three years since Volume No. 2 was issued. The "Copper Manual" was the first book of the kind ever prepared, and it was the pioneer publication devoted to a description at length of the leading copper properties of the world, and the compilation of copper statistics covering a wide range.

The authors have brought to the preparation of this work throughout its successive issues the knowledge and experience gained by many years spent in the study of the various phases of the copper situation, while in close touch with the honored and distinguished men who are known far and near as the most successful and talented leaders in the copper mining world.

The present work has required months of arduous toil and careful preparation, and this has been heartily given to the consummation of a production which we trust will meet with the same kindly reception and consideration as that accorded to the two preceding volumes. Our aim has been to at least maintain the standard set by its predecessors, but our ideal is still higher.

Those interested in copper and the study of this topic feel the need of a book which will embrace a collection of facts regarding this metal and what has been achieved at the different sources of supply, so that the information will be readily available for instant reference on any and all occasions.

Moreover, the value of such information will be in direct ratio to the reliability and character thereof, and those who undertake to furnish it. In this busy age the majority of people do not have time to ransack a multitude of authorities and hunt up scattered data from numerous sources at the expense of time and the labor of research before they can obtain the actual facts sought. It is far preferable to have all that work done by one possessing the knowledge and having the facilities necessary to bring within the compass of the covers of a thoroughly reliable book the clarified and accurate results obtainable on the subject treated.

The plan of the present work has been to bring within the scope of this volume the salient physical features and the financial standing of the principal copper properties. The copper mines of the United States are a specially interesting study, and as they are decidedly the foremost copper properties of the world they have received the particular attention which they deserve. The descriptive sketches and the tabulated statements contained in this book have been prepared from the most reliable data, and much of the information is official or of a semi-official character.

The active and energetic operators of the copper mines of this country have made splendid use of the great natural resources found at the different copper centres. Important application of modern scientific methods has been effective to bring the copper mines of the United States up to the high state of development existing at the best known properties. The modern up-to-date mining equipments now in operation at many of the copper mines are considered indispensable to the achievement of the highest success, and they have been evolved from the experience and brains of men who have devoted their best powers of intellect to the practical solution of almost every mining problem conceivable.

Interest in copper and copper mining has been increased in no small degree by the dissemination of reliable information sent forth from honorable sources, and prepared in attractive form, regarding the exploration and development of those copper properties which have become famous. As this knowledge becomes more generally diffused, capital and ingenuity will become further enlisted in the development of the copper mining industry.

During the last twenty years the annual copper production of the United States has increased from 90,646,080 pounds in 1882, to 662,273,308 pounds in 1902. The industry is established on a gigantic scale, and it has become one of the principal sources of wealth to the country. The reader of the "Copper Manual" will find abundant evidences to corroborate this statement.

We desire to record our most grateful appreciation for data and other valuable information so courteously furnished us by many esteemed friends. It has always been a sincere pleasure to note the kind reviews which the former volumes received in the leading papers of the country. For all these acts and evidences of friendship we tender our hearty and sincere thanks. This new book is sent forth with the earnest hope that it will prove fully as interesting and acceptable as the previous volume.

D. HOUSTON & CO.

New York, December 1, 1903.

NOTE.—We have been able to include in this Volume information and statistics available up to December 1, 1903. It is impossible to obtain the complete reports and statistics for the entire calendar year of 1903 before March or April, 1904, and it ordinarily requires several months to collect and publish in book form results of operations for the full year.

By special efforts and facilities, however, we have succeeded in securing and including in the present "Copper Manual" important data covering not only the first six to ten months of 1903, as well as for the previous year, but up to within a few weeks of the close of 1903. It is obvious therefore, that this work is specially valuable not only for its general contents and other features distinctly its own, but also for the recent information incorporated therein.

D. HOUSTON & CO.

December 15, 1903.

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PERSONAL PHOTOGRAPHS DESCRIBED.

This volume of the "Copper Manual" contains portraits of the following named gentlemen which have been specially secured for this work:

DAVID HOUSTON, late senior member of the firm of D. Houston & Co.

JOHN STANTON, President of the Wolverine Copper Mining Co.; Baltic Mining Co.; Mohawk Mining Co.; Michigan Copper Mining Co., and Winona Copper Co.

ADOLPH LEWISOHN, President of the United Metals Selling Co.

PROFESSOR JAMES DOUGLAS, President of the Copper Queen Consolidated Mining Co.

F. AUG. HEINZE, President of the United Copper Co.

WILLIAM R. TODD, President of the Quincy Mining Co.

J. PARKE CHANNING, President of the Tennessee Copper Co.

THOMAS W. LAWSON, of the firm of Lawson, Arnold & Co.

J. R. STANTON, President of the Phœnix Consolidated Copper Co., and Treasurer of the Baltic, Mohawk and other Copper Companies.

WM. A. PAINE, President of the Copper Consolidated Co.

JAMES J. PHELAN, of the firm of Hornblower & Weeks.

CAMERON CURRIE, of the firm of Cameron Currie & Co.

FRANK KLEPETKO, Consulting Engineer.

WM. F. FITZGERALD, of the firm of Towle & Fitzgerald.

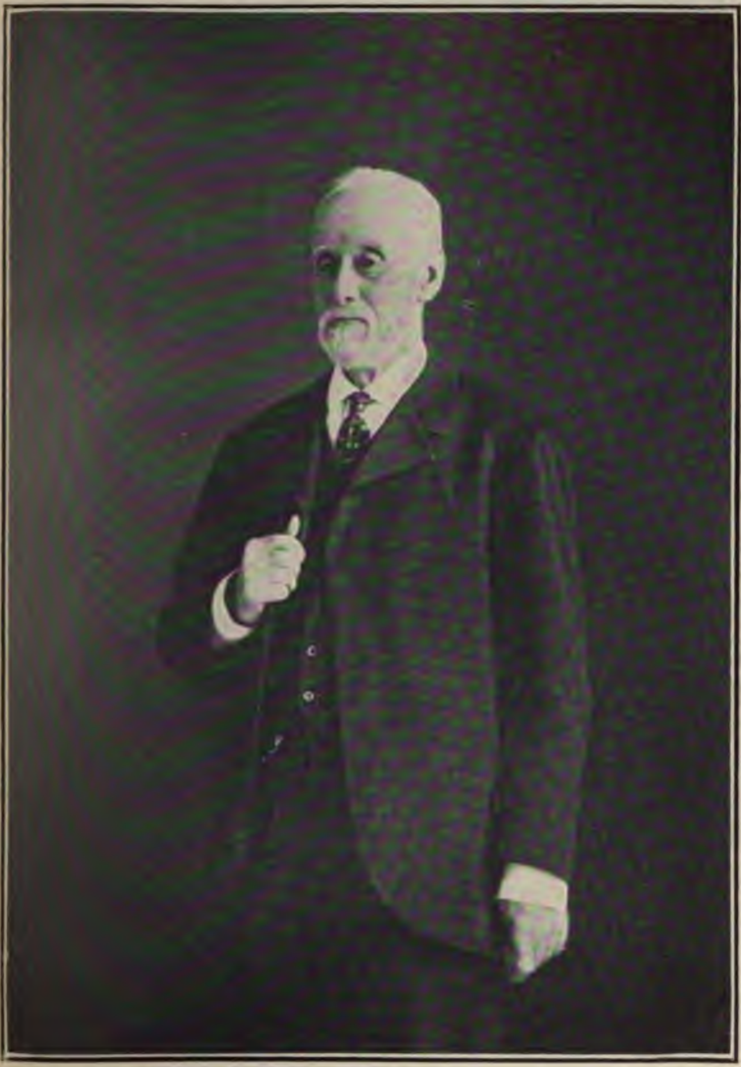
In Memoriam.

David Houston,

Born July 12, 1822. **Died June 17, 1903.**

It was decided to insert the portrait of our late lamented senior in this volume of the "Copper Manual," as it appears on the page opposite, in memoriam of him, and because it is a most lifelike photograph, taken less than a month before his decease.

The late David Houston was engaged in business as a metal broker in New York City for a little over forty years, and was the senior member of the firm of D. Houston & Co. He was born July 12, 1822, and died June 17, 1903. For a period of many years he was one of the most active Copper Brokers in the trade, and owing to his remarkable health was able to maintain his unrelaxed interest in business affairs much beyond the ordinary term of life. During his long career in the copper business three sons were associated with him at different periods in the same occupation, two of whom, William and David, passed away years ago. His last illness was of short duration, and although four score his physical vigor was preserved to a wonderful degree.



THE LATE DAVID HOUSTON.

THE
PUBLIC
ASTOR,
TILDEN

THE COPPER MINING INDUSTRY.

Remarkable and rapid strides have been made in the development of the copper mining industry of the United States during the past few years, and American copper mines are now recognized as models in everything pertaining to equipment, appliances, machinery and methods of operation. The great copper-producing districts of this country have become famous not only for the extent and richness of the cupriferous deposits whence the supply of the metal is chiefly derived, but also for the splendid and complete surface plants used for hoisting, stamping, smelting and refining the immense quantities of copper annually wrested from the bowels of the earth.

In no other country have the discoveries been on such a gigantic scale or the quality of the copper deposits proved so excellent and valuable as in this country. It is not strange, therefore, that the genius and ingenuity of the mining fraternity of the United States have been stimulated to devise the best and most economical methods for producing and treating copper where it is found in such abundance and of such superior fineness. The copper mines, smelting plants and refineries, with the other accessories to these establishments, at Lake Superior, Montana and Arizona—the three great copper-producing centres of this country—as well as the magnificent electrolytic refineries situated on the Raritan River, at Perth Amboy, N. J.; Baltimore, Md.; Constable

Hook, N. J., and elsewhere, constitute the finest specimens of mining equipment and smelting and refining plants to be found anywhere in the world. These superb plants represent a cash investment of many millions of dollars, and are the outcome of exhaustive experiments and an accumulated experience gained during the past fifty years, and stand as worthy monuments to the brains and the indomitable mining talent which devised them. For skilful and scientific adaptation to their designed metallurgic use they represent the crystallization of the best methods ever evolved.

The United States holds the foremost place as a producer of copper, and has left all its competitors far behind in the race. This country is not satisfied with the second best for its great mining plants any more than in other departments of industry; hence the best machinery, the best appliances, in fact the best of everything, have gone into the outfit of its copper mines, smelting plants and refineries; and the result is seen in the phenomenal success achieved and the enormous aggregate of dividends paid by the copper-mining companies of the United States.

Great as has been the success of the past in the field of copper mining, it may be considered as simply the harbinger of a greater and more wonderful success yet to be achieved. The future looms up radiant with the brightest promise for this growing branch of industry. Mining camps in the majority of cases are no longer isolated settlements remote from railroads and civilization generally, but steel rails have been laid right to the very heart of the miner's busy operations, and the iron horse has penetrated his haunts of labor with its service of helpfulness. Railroad accessibility and transportation facilities have contributed their share in bringing the wealth of the mines to every centre of commerce, thus making the mineral discoveries more commercially valuable by placing them within easy reach of the manufacturer and artisan. Modern methods of treating copper have lessened the cost of production, and better transportation facilities at reasonable rates have opened up the markets of the world to the producer of the metal. These things have been absolute necessities for the development of American copper mines. Copper being a surplus product of this country, producers have been compelled to find an outlet in foreign countries for a large percentage of the domestic copper output, hence the value to mine operators of low freights for long haulage from mines at distant points to Atlantic seaboard ports.

The world's supply of copper comes from about twenty-two different countries, and returns for the year 1902 give 1,215,132,800 pounds as the total copper production of the globe. At an average of 12½ cents per pound the aggregate output of copper last year would be worth $151,891,600. On the market basis of 15 cents per pound a product equal to that for 1902 would be worth $182,269,920, and at 17 cents per pound, at which price copper sold for months together in 1899, 1900 and 1901, it would be worth $206,572,576. The difference between a market price of 12½ cents per pound and 17 cents per pound would amount to $54,680,976, and shows in cold figures what a serious curtailment occurred in the earnings of copper-mining companies when the market broke from the ruling price of 16½@17 cents in December, 1901. A cent per pound either way on the world's annual output of copper, as per returns for 1902, amounts to $12,151,328. The United States is the largest producer of copper in the world, and furnished 54.5 per cent of the world's product in 1902. This country has contributed more than one-half of the copper produced by the entire world for the last eight years, and is likely to hold this foremost position indefinitely.

At the beginning of the nineteenth century the world's production of copper amounted to the comparatively insignificant quantity of about 17,920,000 pounds a year, while at the beginning of the twentieth century the world's output of copper was at the rate of about 22,348,480 pounds for each week of the year. During the nineteenth century it is estimated that the world's production of copper was about 9,000,000 tons. At the rate of production for the past two years, and without allowing for any increase, the aggregate copper output during the twentieth century will reach fully 53,000,000 tons, which at an average of 14 cents per pound would make the twentieth century's production of copper worth $16,620,800,000. But who can safely predict the possibilities of this new century? If the output of copper increases during the next hundred years in anything like the same ratio as during the past century, the year 2000 will show an output which would look truly appalling now. Before this century closes, however, many of the large copper mines of the present day will probably have become exhausted, and new sources of supply will have to be discovered to take their place. If we take a retrospect of the past it will be interesting to note that fifty-eight years ago this country produced only 224,000 pounds of copper; fifty years ago, 4,480,000 pounds; forty years ago, 19,040,000 pounds; thirty years ago, 34,720,000 pounds; twenty years ago, 117,151,795 pounds; ten years ago, 339,785,972 pounds; five years ago, 546,262,987 pounds, and in the year 1902 the United States copper output was, per official returns, 662,273,308 pounds.

In the year 1880 this country furnished only about 16.2 per cent of the world's production of copper, but in 1885 the United States production doubled and rose to 32.8 per cent of the world's product. In 1890 American copper production was equal to 43.1 per cent of that for the world, and in 1900 it was 55.3 per cent of the globe's output. For the year 1902 this country furnished 54.5 per cent of the copper produced throughout the world as per the accepted statistics of output. The production of the United States in 1902 was 30,402 tons greater than in 1901, and that for the world was 23,682 tons more in 1902 than during the year previous, being an increase in the world's product of about 4.5 per cent, compared with the aggregate copper production in 1901. Nine countries supplied 93.5 per cent of the total copper production of the world in 1902. Chili produced 1,850 tons less in 1902 than in 1901, but 3,230 tons more than in 1900 and 9,570 tons less than during the year 1885. The output of Chilian copper last year was 67.4 per cent below that of twenty-one years ago.

Australasia produced 2,235 tons less copper in 1902 than in 1901, but 5,620 tons more than in 1900 and 22,140 tons more than in 1892. The copper output in Japan last year was the largest on record, and exceeded that for 1901 by 2,300 tons. Japanese production has more than doubled since 1888. Mexico has been steadily increasing its output of copper for the last seven years, and its production of 35,785 tons for the year 1902 compares with 11,150 tons in 1896 and 250 tons in 1886. Spain and Portugal turned out 49,790 tons of copper in 1902, against 53,621 tons in 1901 and 56,462 tons in 1892. The production of Spain and Portugal is just about what it was in 1886, while during the past seventeen years the copper product from United States mines has increased about 225,000 tons, an increase in American output alone equal to the world's production in the year 1887. This country is now producing more copper annually than was produced by all the copper mines of the entire world only a dozen years ago. The growth of the copper-mining industry in Canada recently is remarkable, that country having given an output in 1902 of 17,485 tons, against 8,500 tons in 1900 and 4,000 tons in 1896.

The world's copper production has doubled during the past twelve years, the output for 1890 having been 269,455 tons and that for 1902 having been 542,470 tons. And yet with all this wonderful growth in the production of copper the demands for the red metal for electrical and other purposes are so enormous that the United

States, England, France and Germany are together able to consume annually, as per estimates, from 470,000 to 492,000 tons, thereby leaving the balance of production, amounting to from 50,470 to 72,470 tons, as a supply for the rest of the world. Estimates of American copper consumption differ, but if calculated at 20,000 tons per month, and taking the foreign returns of consumption, the result for 1902 is as per the following table for the countries named:

Copper Consumption in 1902.

In Tons of 2,240 *Pounds.*

United States	240,000
Germany	105,000
England	84,777
France	49,254
Total for four countries	479,031

This country leads the world both as a producer and consumer of copper, and there is little likelihood that it will relinquish this honor to any other nation. The rapid development of electrical power during the past few years has created an enormous demand for copper. Electric traction has become a modern necessity; so also have the electric light and the telephone. Electric traction, when applied to a horse railway, reduces the expense per car-mile from 40 to 50 per cent, it is said; and in some instances street railways have been raised from the verge of bankruptcy to prosperity by being electrified. The electric railways have greatly increased the traffic on street roads and the revenue of the companies operating them. This country has been "trolleyized" to a remarkable extent, and by furnishing rapid and clean transit in cities and suburbs they are the boon of the age to the public. An idea of the vastness of the great trolley system of this country may be obtained when it is stated that last year there were 26,000 miles of track, on which 60,000 cars were operated, and the amount of the investment in street railways was placed at $1,800,000,000. The yearly wages paid to the employes on these roads was stated at $250,000,000. This appears small in comparison with our 195,000 miles or more of steam railway, but within recent years a mile of electric road was laid for every two miles of steam road.

With a population of 76,303,387 in these United States, and an area of 3,025,600 square miles of territory over which the Stars and Stripes float grandly, the possibilities for electrical and all other desirable expansion are simply so great as to become bewildering. Other countries are far behind the United States in the adoption of the electric road, but they are beginning to wake up and progress is setting in. All Canada had only 760 miles of trolley lines not so very long ago, according to the statistics from there. Within a recent period reports showed that London had not half so many miles of electrical roads as Brooklyn, although it has four times as large a population. Paris had but 200 miles, and Glasgow only 73 miles. It cannot be long before the Old World will introduce the modern method of travel at a much faster rate; and as electric roads may be expected ultimately to attain a speed of 100 miles an hour, without smoke or cinders, their popularity and increase are assured.

Another very important feature in connection with the latest developments in the electrical field is the long-distance electrical transmission of water power. The subject is profoundly interesting, and recent achievements connected with the transmission of water power speak volumes for the high standard of perfection reached by the modern electrical apparatus and systems in operation. It is now possible to transmit for regular commercial service an exceedingly high tension, and great electrical pressure can be safely and certainly handled. The electrical pressures now in commercial use would have been regarded as incredible ten or twelve years ago, and were unheard of five to seven years ago. The two longest systems of electric transmission in the world are located in California, and the developments along this line have been specially brilliant and successful in that part of the country.

The pioneer electrical transmission plant on the Pacific Coast began operations about ten years ago, and succeeded in transmitting a pressure of 10,000 volts for a distance of thirty miles. This was the beginning of water power transmission in California. The location of the best falls in that State are at a great distance from the large cities, and this compelled engineers to perfect a system that would break the long-distance records for the transmission of electrical power. Plants are now in operation capable of transmitting electrical power a distance of over 200 miles of wire. With the radius of transmission raised to 218½ miles the utilization of electric energy will greatly increase, and plans are mentioned to develop new power plants having from 10,000 to as high as 250,000 horsepower at each single site for the transmission of electrical water power within a radius of 100 miles or over. The ability to send a voltage of enormous force hundreds of miles has solved the problem of bringing into commercial use the latent and hitherto dormant resources residing in mountain streams and falls, and employing them to operate street cars, light cities and supply power to run machinery. The use of electricity in mining is on the increase also, and is proving most valuable and economical. Electricity is the great modern force which has produced a revolution in methods of travel, communication, and illumination. This wonderful agent has been in existence all through the ages, but it is only during a comparatively recent period that it has been utilized and harnessed by man for practical and commercial uses. In view of the remarkable developments which have occurred during recent years, it is reasonable to expect that new investigations and discoveries will lead to important results in the field of electrical power, which will assuredly tend to the greatly increased use of copper. Unless new discoveries of copper deposits are found and opened up on a large scale, it may eventually become a serious problem where the copper will be obtainable to fully meet the exceedingly heavy requirements certain to arise in the future.

UNITED STATES COPPER PRODUCTION.
BY DISTRICTS.

OUTPUT BY MONTHS — IN POUNDS OF FINE COPPER.

Official.

	January, 1901.	February, 1901.
Montana	22,853,789	19,737,436
Lake Superior	10,777,827	10,374,060
Arizona	9,553,647	9,537,415
Outside sources	7,616,000	7,616,000
Total	50,801,263	47,264,911

	March, 1901.	April, 1901.
Montana	22,510,445	18,508,919
Lake Superior	10,788,938	11,320,199
Arizona	11,465,860	10,576.677
Outside sources	7,616,000	7,616,000
Total	52,381,243	48,021,795

	May, 1901.	June, 1901.
Montana	20,771,379	19,872,942
Lake Superior	11,725,194	12,382.561
Arizona	9,822,223	10,083,001
Outside sources	7,840,000	7,840,000
Total	50,158,796	50,178,504

	July, 1901.	August, 1901.
Montana	19,845,124	22,880.142
Lake Superior	12,350,615	13,472,046
Arizona	9,435,031	6,805.569
Outside sources	7,616,000	7,616,000
Total	49,246,770	50,773,757

	September, 1901.	October, 1901.
Montana	17,480,608	20,903,222
Lake Superior	13,220,694	14,452.975
Arizona	9,798,868	10,559,686
Outside sources	7,840,000	8,064,000
Total	48,340,170	53,979,883

	November, 1901.	December, 1901.
Montana	15,308,691	12,359,251
Lake Superior	13,631,313	12,693,184
Arizona	11,667,530	10,793,761
Outside sources	8,064,000	8,512,000
Total	48,671,534	44,358.196

UNITED STATES COPPER PRODUCTION IN POUNDS. BY DISTRICTS.

	January, 1902.	February, 1902.
Montana	11,115,563	14,375,037
Lake Superior	12,700,554	13,302,134
Arizona	10,131,506	10,248,884
Outside sources	8,512,000	7,616,000
Total	42,459,623	45,542,055

	March, 1902.	April, 1902.
Montana	20,501,994	23,943.855
Lake Superior	13,384,705	12.677.544
Arizona	11.663.850	10.024,298
Outside sources	8,288,000	8,512.000
Total	53,838,549	55,157,697

	May, 1902.	June, 1902.
Montana	24,354.861	23.899,721
Lake Superior	12,915,588	15,466,725
Arizona	11.478.186	11.571.690
Outside sources	8,960,000	8,960,000
Total	57,708,635	59,898,136

	July, 1902.	August, 1902.
Montana	26.234,140	24.715.684
Lake Superior	14,659,426	14,935,085
Arizona	10,064,806	7,735,600
Other States	—	4,573.355
Outside sources	8,960,000	4,704,000
Total	59,918,372	56,663,724

	September, 1902.	October, 1902.
Montana	25,628.660	26,373.465
Lake Superior	15,294,751	14,786.959
Arizona	7,362,923	8,540,970
Other States	4,775,476	4,398.760
Outside sources	4,704,000	4,704.000
Total	57,765,810	58,804,154

	November, 1902.	December, 1902.
Montana	23.386.226	23.968.569
Lake Superior	15.669.043	13.824.100
Arizona	8.645.937	9,896.228
Other States	3,813,134	5,009.316
Outside sources	5,152,000	5,152,000
Total	56,666,340	57.850,213

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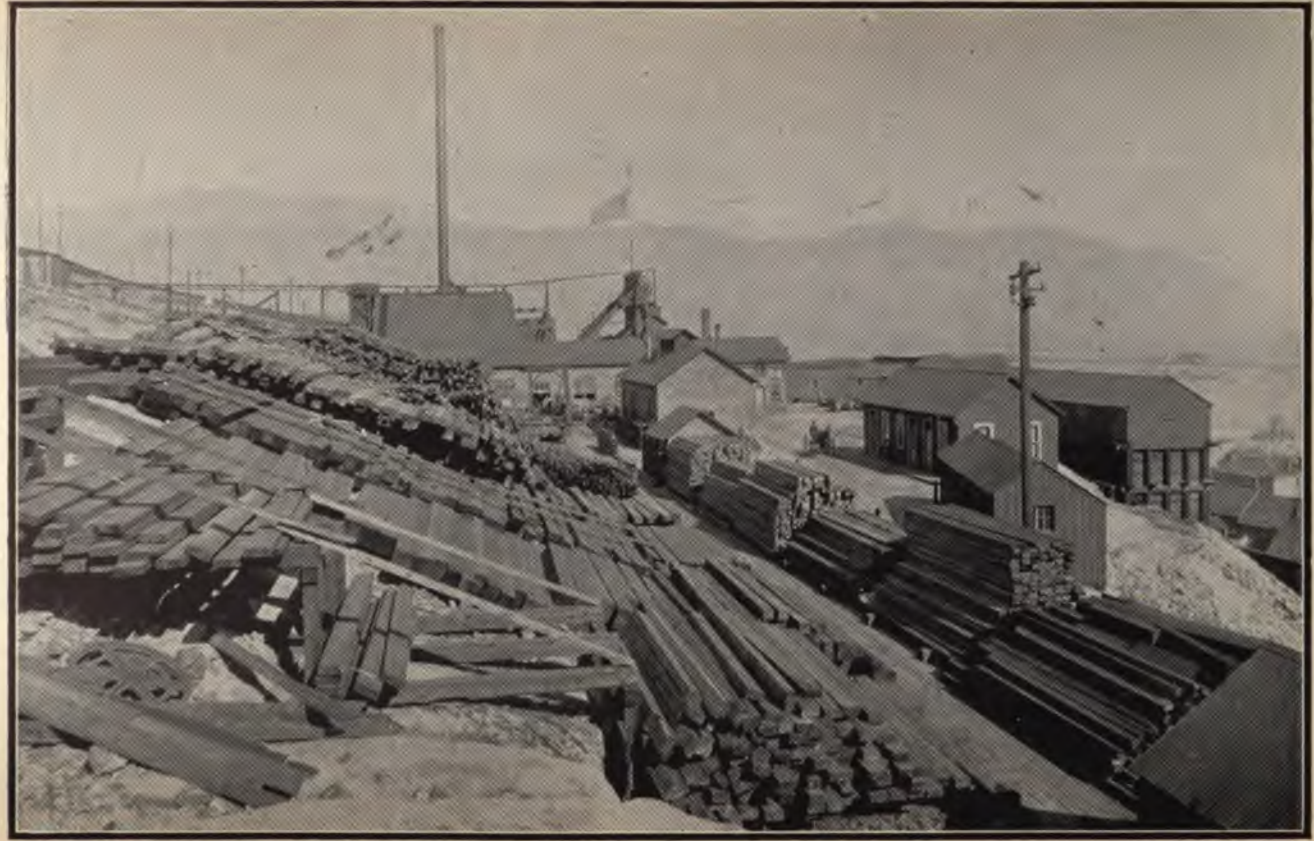


PENNSYLVANIA MINE, BUTTE.

AMALGAMATED COPPER COMPANY.

The Amalgamated Copper Company controls and operates immense mining properties in Butte, Mont. The properties now worked under its direction are the Anaconda Copper Mining Company, Boston & Montana Consolidated Copper and Silver Mining Company, Butte & Boston Consolidated Mining Company, Parrot Silver and Copper Company, Washoe Copper Company, Colorado Smelting and Mining Company, besides other important non-mining properties.

The company was organized April 27, 1899, under the laws of the State of New Jersey, with a capital of $75,000,000, divided into 750,000 shares of $100 each. The directors at a meeting held May 21, 1901, decided that it was advisable to increase the capital stock of the company from $75,000,000 to $155,000,000, and this was accordingly done in June, 1901.

In June, 1901, the Amalgamated Copper Company acquired 137,888 shares of the capital stock of the Boston & Montana Consolidated Copper and Silver Mining Company out of a total issue of 150,000 shares, and 183,850 shares of the Butte & Boston Consolidated Mining Company, out of a total issue of 200,000 shares. It issued therefor 735,402 shares of its increased capital, being at the rate of five and one-third shares of Amalgamated stock for one share of Boston & Montana and one and one-third shares of the Butte & Boston, taken together.

The remaining 64,598 shares of increased capital to be issued is same proportion for the balance of the stock of the Boston & Montana and the Butte & Boston. The acquisition of the Boston & Montana, with its large cash assets, magnificent mines, smelters, refineries, etc., added greatly to the value of the Amalgamated holdings. The stockholders of the Boston & Montana and the Butte & Boston companies were also given the option of receiving $375 per share for Boston & Montana stock, and $92.50 per share for Butte & Boston stock if preferred to an exchange on above-mentioned basis for Amalgamated shares.

It is stated that the Amalgamated Company now owns 147,915 shares of Boston & Montana out of a total capital of 150,000 shares, and 197,222 shares of Butte & Boston out of the 200,000 shares of the latter. About 13,000 stockholders are reported in the Amalgamated Company.

The holdings of the Amalgamated Company are most valuable, and this will be more fully demonstrated in due course to those who have only a limited knowledge of the vast property interests vested in this corporation.

The Amalgamated Copper Company dividends to July 1, 1903, aggregate $21,350,000, less the amount figured against the unissued shares.

The individual companies controlled by the Amalgamated Company are described elsewhere at length.

As per the statements filed with the County Assessor at Butte, the following table shows the net earnings of the principal properties controlled by the Amalgamated Copper Company for the fiscal year ended June 1, 1903, and previous years, as follows:

	1902-3.	1901-2.	1900-1.	1899-1900.
Boston & Montana	$4,053,467	$1,629,695	$7,043,302	$3,701,510
Anaconda	1,601,200	1,289,610	5,069,071	5,365,520
Butte & Boston	202,408	166,135	586,052	———
Parrot	586,365	577,620	510,196	336,180
Colorado Co.	43,090	152,495	303,619	———
Total	$6,486,530	$3,815,555	$13,512,240	$9,403,210

The Amalgamated Copper Company paid a regular quarterly dividend of ½ per cent, August 31, 1903. Total dividends to date named amount to $22,125,000, less the amount figured against unissued stock.

October 15, 1903.—The company declared a regular quarterly dividend of ½ per cent, payable November 30, 1903. Total dividends, $22,900,000. Unissued stock to be deducted.

Officers of the Amalgamated Copper Company are:

H. H. ROGERS, *President.*
W. G. ROCKEFELLER, *Secretary and Treasurer.*

Directors:

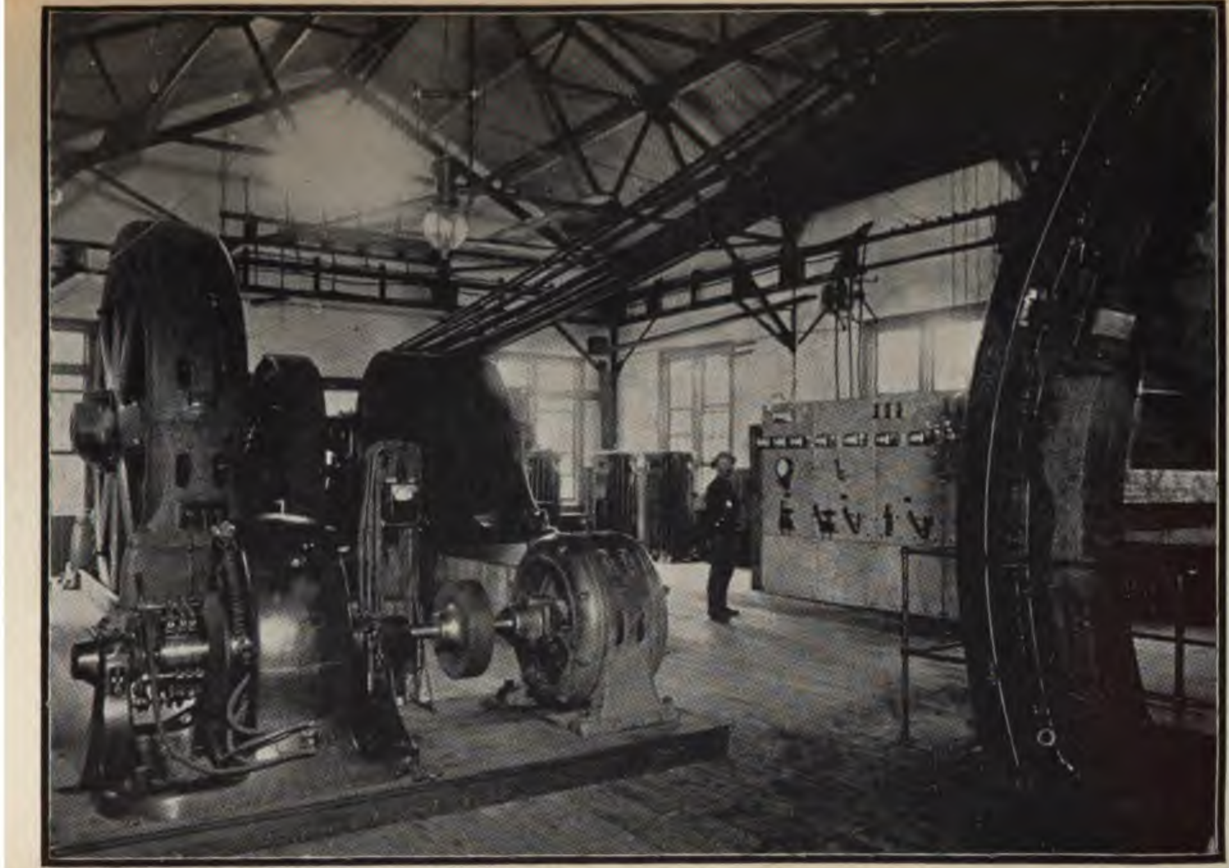
H. H. ROGERS,
W. G. ROCKEFELLER,
ALBERT C. BURRAGE,
F. P. OLCOTT,
WILLIAM ROCKEFELLER,
JAMES STILLMAN,
ROBERT BACON,
ANSON R. FLOWER,
WILLIAM SCALLON.

Office, 52 Broadway, New York.

ANACONDA COPPER MINING COMPANY.

This great company has held the premier position among the copper mines of the world as respects the size of its annual output. It has been astonishingly prolific in its outpouring of gold, silver and copper each year, and there are yet in the subterraneous depths of its several mines vast quantities of mineral treasures. The property is an extensive one, and includes the following mines: Anaconda, St. Lawrence Nos. 1, 2, and 3; Never Sweat, High Ore, Diamond, Bell, Mountain Consolidated Nos. 1 and 2, Buffalo, and Green Mountain. The Anaconda syndicate of mines have been developed on a large scale, and some of the shafts have reached a depth of 2,200 feet. At some of the mines shaft sinking was pushed vigorously year after year and new ground opened up rapidly to keep the output up to the enormous scale set by the Anaconda Company. The mines were recently reported to be shipping between 4,000 and 5,000 tons of ore daily to the smelter at Anaconda, including ores from the Parrot and Colusa Parrot. As the Anaconda, with the Boston & Montana, Parrot, Colorado Smelting Company, and Butte & Boston are now all operated under the direct management of the Amalgamated Copper Company, separate returns of output and other information are not so readily obtainable.

The Anaconda's reports filed with the Silver Bow County assessor at Butte, Mont., shows the following operations for the year ending June 1, 1902, compared with the two previous fiscal years:



800 HORSE-POWER INDUCTION MOTOR DRIVING AIR COMPRESSOR AT NEVER SWEAT

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	1902.	1901.	1900.
Tons of ore extracted	984,958	1,276,896	1,421,500
Gross yield per ton	$10.66	$14.20	$13.18
Cost of mining, per ton	3.80	3.97	4.38
Total cost of mining	3,742,312	5,069,071	6,226,655
Transportation to smelter	15c.	15c.	21c.
Total cost of transportation	$147,743	$191,534	$300,031
Cost of reduction, per ton	3.32	4.14	3.77
Total cost of reduction	3,267,182	5,288,720	5,345,145
Expended for labor	3,860,789	5,572,392	5,878,851
Expended for machinery, etc	3,148,705	4,785,399	5,703,949
Freight	147,743	191,534	300,031
Charges for marketing, refining, etc.	2,052,105	2,007,415	1,481,780

RECAPITULATION OF ABOVE ITEMS:

	1902.	1901.	1900.
Gross receipts	$10,498,953	$18,128,558	$18,730,131
Cost of mining	3,742,312	5,069,047	6,228,655
Freight on ore	147,743	191,534	300,031
Cost of reduction	3,267,182	5,288,720	5,345,145
Selling and marketing	2,052,005	2,007,415	1,481,780
Net proceeds	1,289,610	5,571,815	5,365,518

The Anaconda Company also own the Modoc mine, in which it is stated millions of tons of ore are in sight running 1½ per cent. copper. When some more perfect method of concentration and smelting is discovered then these low grade ores are expected to prove available for treatment on a profitable basis. Montana ores vary greatly in value, and in the early development of the mines in that district the percentage of copper ran as high as 60 per cent. in some cases, but this high grade ore was found comparatively near the surface. At present in the deeper levels the ore found in the leading Montana mines will probably run from 2½ to 8 per cent. copper. At some properties some of the ore bodies may not run quite 2½ per cent., but silver and gold values have proved a valuable asset. Sulphides preponderate in the Butte mines, and the veins vary from a few inches up to more than a hundred feet in width.

The Anaconda group of mines are located in Butte, Mont., which is the richest copper producing camp in the world. Montana produced 268,497,775 pounds of copper during the calendar year 1902, or 40 per cent. of the United States production, as per official returns. If the mines of Butte were to suspend operations for a single year there would be a famine of that metal in the markets of the world.

The district containing the leading copper mines of Montana is very circumscribed in area, being only about six miles in length and four miles in width, but the veins often carry immense ore values, owing to their greater dimensions than those found in some other copper districts. According to the Inspector of Mines, the production from the Butte district to the end of 1902 is placed at a valuation of about $500,000,000. The low grade ores ranging from 3 to 5 per cent. copper are treated by the wet process, and about one ton of concentrates is obtained from three or four tons of crude ore. Ores carrying from 10 to 15 per cent of copper are smelted direct, turned into matte, or reduced to pig copper of 98½ to 99½ per cent. copper, besides gold and silver contents.

The mining industry is the chief occupation of the denizens of Butte. The population has increased with the development of the great mines at this centre, and from somewhere around a thousand individuals thirty years ago or less Butte has become a city of 61,116 inhabitants. The Montana mines are also rich in gold and silver, and in addition to the copper output therefrom they produced, as per carefully compiled returns, precious metals with an estimated commercial value amounting to over $11,000,000 in 1902.

The Anaconda is the greatest in size among the Butte mines. It was originally operated for its rich deposits of precious metals. The ore near the surface was silver, and it is said no indication of copper was found until the shaft had been sunk 150 feet. As depth was attained great copper ore bodies were discovered, carrying at the same time handsome quantities of silver and gold. The main fissures of the Butte mining district are easterly and westerly, and the ore values occur in distinct fissure veins. The copper veins contain chalcocite, enargite, bornite, pyrite, quartz, galena and sphalerite, together with gold and silver minerals, and the oxidation products of the sulphides and carbonates.

The mines operated by the Anaconda Copper Mining Company in 1902 were the Anaconda, Never Sweat, St. Lawrence, Mountain Consolidated, Green Mountain, Diamond, Bell and High Ore. The shaft at the Anaconda is down to a depth of 1,800 feet, and this has been the depth since 1900, when 100 feet was sunk in that year. The shaft is three compartment, and there are in operation two double-deck cages with two 8-ton skips attached. The skips are loaded from small bins at the different levels and hoisted to the surface, where the ore is dumped automatically from the skips into bins at the top of the shaft. The back-filling system is in operation in part of the mine, and it has proved successful and safe during a period of two years. Small electric motors are in use in the Anaconda, although most of the ore is hauled by horses from the stopes to the shaft. The horses are kept in underground stables and are seldom brought up to the light of day. There is a modern steel gallows frame 100 feet high at this shaft. The old wooden shaft houses have been supplanted by steel gallows frames at the principal shafts, thereby avoiding the danger of destruction by fire, besides being capable for deeper mining. It is expected that shafts will be sunk much deeper in the near future at the big Montana copper mines. There are about 30 exits from the main shaft, and several connections with the other mines. There are electric flash lights used at this shaft for call signals.

The main shaft at the St. Lawrence mine has three compartments and is fitted with electric flash lights, used for call bells. A steel gallows frame 100 feet high has been erected at the top of the shaft. There is a Union Iron Works engine, 30 x 72, in operation, of similar dimensions as that at the Anaconda shaft, excepting that the flat steel hoisting rope is a little heavier at the St. Lawrence. Two double-decked cages with two 8-ton skips are used for lifting the ore to the surface. Last year the Anaconda and St. Lawrence were working the same vein. At the 1,000 feet level there is a Reidler pump having a capacity of 600 gallons per minute, used for pumping the water from the Anaconda, St. Lawrence and Never Sweat. There are about 22 exits from this shaft. A fire occurred in the St. Lawrence portion of the property some 13 or 14 years ago, but being under control and confined within certain limits, operations have been carried on at the surrounding ground. It is believed that the burned portion will yield a great quantity of rich ore if ever the fire becomes totally extinguished.

The Never Sweat mine has a main shaft 2,000 feet deep. In 1900 the shaft was sunk 200 feet, but there has been no increase in its depth during the past two years. An 8,000-horse-power Union Iron Works engine, 26 x 72 and 46 x 72 cylinder, is used for hoisting purposes, having a lifting capacity of 32,000 pounds 3,000 feet per minute, with a pressure of 125 pounds of steam. The weight of this engine is 375 tons. The same arrangements for raising the ore to the surface prevail as at the Anaconda shaft, with similar sized skips. There are 32 exits from the Never Sweat, and connections with the Anaconda and St. Lawrence at nearly every level. The air compressor plant which furnishes the compressed air for the Anaconda, St. Lawrence and Never Sweat is located at this mine. It is operated by an electric induction motor of 800-horse-power, and this motor runs two 800-horse-power compressors and one 1,200-horse-power compressor. The Never Sweat main shaft is one of three compartments, and is fitted with electric flash light signals.

The High Ore shaft is three compartment, and is down 2,200 feet. There was no sinking done in the last two years, but in 1900 the shaft was driven 500 feet deeper. Operations were actively carried on in this part of the mine in 1902. A 30 x 72 Union Iron Works engine is in commission to do the hoisting from this shaft. The services of a large pumping plant are required here to keep the lower levels free from water in several of the mines adjoining. A drain tunnel is being constructed from the St. Lawrence to the High Ore.

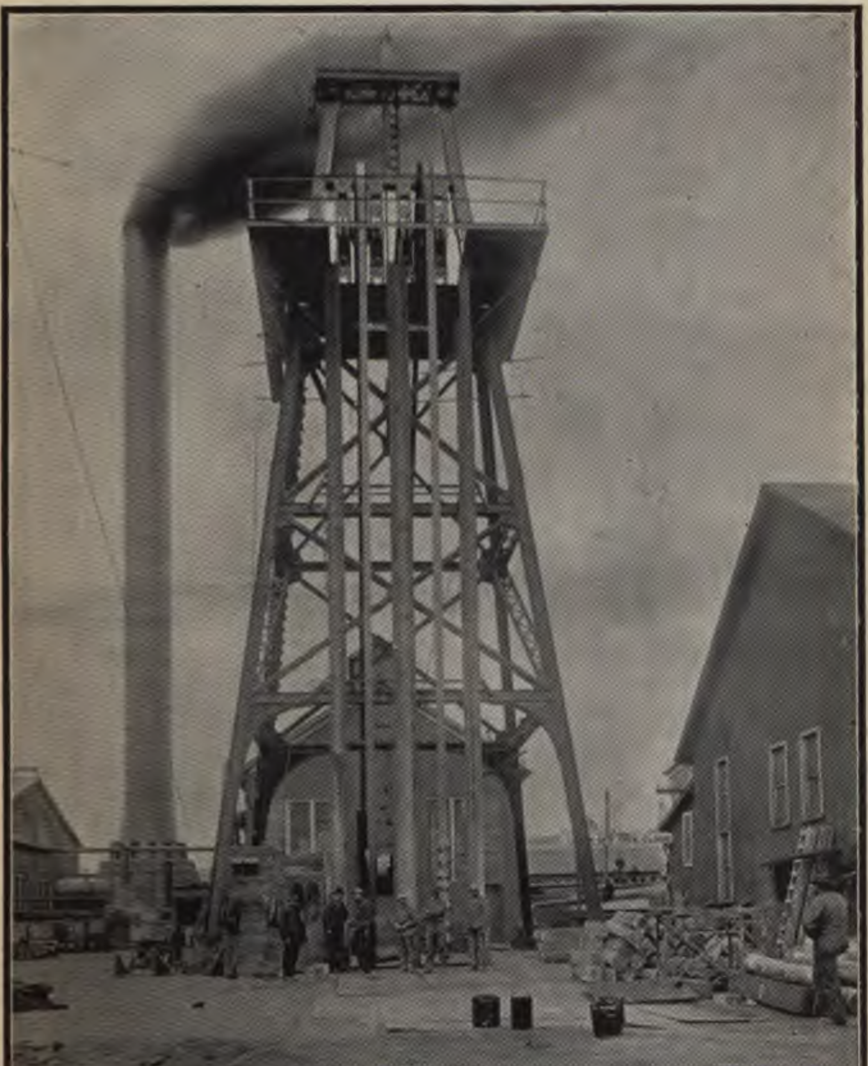
The Mountain Consolidated main shaft has attained a depth of 2,200 feet. The facilities for hoisting ore from this shaft are well provided for by a high and low pressure engine of similar make and dimensions as that in use at the Never Sweat mine. There are about 28 exits from this shaft, and numerous connections with the other adjoining mines from the 400-foot level to the other lower levels.

The Diamond mine has a main shaft down 2,200 feet, and has a steel gallows frame at the surface 110 feet high. Two double-decked cages are in use, having two 8-ton skips attached. The shaft was sunk 400 feet in 1900 to its present depth. A Risdon engine, 30 x 72 cylinder, and a flat steel rope, ½ x 7 inches, does the hoisting. There are 16 exits and connections with other mines.

The shaft at the Bell mine is down 1,800 feet, having been sunk 250 feet within about the last two years. A 20 x 40 cylinder engine is in operation at this shaft, and two air compressors of 70 drills each capacity.

The Green Mountain mine shaft is down 2,200 feet, and has three compartments. A 30 x 70 cylinder engine and two four-deck cages are provided for raising ore. There are 10 exits and connections with several of the other workings.

The Anaconda Copper Mining Company has other valuable mining properties, but the mines named were those operated during the year 1902. During the past year the company employed some 2,853 men in and about its mining



ANACONDA MINE, STEEL GALLOWS FRAME.

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plants as miners, surface men and engineers. The number of men employed at the mines named in 1902 was as follows:

Mine.	Men underground.	Top men.	Engineers.	Total.
Anaconda	460	160	4	624
St. Lawrence	425	34	3	462
High Ore	250	57	3	310
Bell and Diamond	471	85	6	562
Mountain Con	300	49	3	352
Green Mountain	32	6	3	41

The number of men employed at the Never Sweat was probably in the neighborhood of 500. In the year 1900 the company employed at its mines 3,932 men.

The new Washoe smelter, near the city of Anaconda, is now treating the output of the Anaconda Copper Company's mines, and the old smelting works of the company have been abandoned. The new reduction works were completed and went into operation in 1902, and they are reputed to be the largest and finest reduction works of their kind in the world.

The plant is one of gigantic size, and is situated on a plot of about 300 acres of elevated ground, conveniently located for handling the enormous quantities of ore which it is designed to treat. The erection of the great smelting plant occupied about a year and seven months, and into the various parts of this huge structure there have gone 25,000,000 feet of lumber, 20,000 tons of steel and iron, 50,000 yards of masonry and 1,000 carloads of brick. The capacity of the new plant is put at 4,800 tons daily, and the several departments for treating the material are all equipped with the most complete and modern devices yet discovered for such purpose.

The Concentrator is a duplicate establishment, each of the two structures being 255 x 335 feet, separated by a space of 136 feet between the buildings, which is occupied by the power house. There are eight divisions in the Concentrator structures, and so arranged as to enable each section to handle 600 tons of ore in 24 hours and operate independently of each other if required. The crude ore is brought from the mines to the smelter, a distance of about 35 miles, and delivered into bins, from whence it goes to the crusher and then to the blast furnace. The steel power house contains two triple expansion engines of the Nordberg type, each being of 3,600-horse-power maximum and 2,000-horse-power ordinary. There is also an auxiliary Fraser & Chalmers triple expansion engine of 1,400-horse-power. There are two Westinghouse electrical generators, and other machinery needed for the concentrating department.

The Roaster department is of steel, 98 x 320 feet, containing 48 MacDougal furnaces, each about 28 feet high. Each furnace can roast 40 tons per 24 hours. They work automatically, and after being first heated they have no further need of fuel, as the sulphur released from the ore is appropriated as fuel throughout the rest of the process. The ores are discharged automatically from the furnaces into receptacles at the bottom of same, and afterward sent to the reverberatory furnaces to be smelted. The reverberatory building is of steel, 184 x 518 feet. The stack is placed in the centre. There are 14 reverberatory furnaces, each 24 x 54 feet, every one having a smelting capacity of about 120 tons in 24 hours. The building containing the blast furnaces is steel, 82 x 200 feet, and three stories high. There are five large furnaces, 56 x 180 inches, and about 40 feet high, each one of which is capable of smelting 400 tons in 24 hours.

There are two storage furnaces of the reverberatory type in the converter building, which is a steel building 137 x 416 feet. In this building are electric cranes for handling the molten metal, 8 converter stands with converters, 3 casting furnaces for casting pig copper and anodes, and other machinery. The casting furnaces hold about 75 tons of melted copper, and this metal is drawn off from the furnaces, cooled in tanks filled with water, and placed on cars ready for market or shipment to the electrolytic refineries. There is also a power house, built of steel and brick, 80 x 500 feet, where machinery and air compressors furnish the power to the smelting departments. The entire outfit of this great smelting establishment is the product of careful experimenting, and represents the best devices of able engineers and metallurgists.

The Anaconda Company carries on large subsidiary enterprises in addition to the mining business. These may be classified as side issues to the chief occupation and purpose of the company, but they are important departments, operating on a large scale. The coal mines, machine shops, stores, hotel, electric lighting plant, tramways, real estate, water works, timber lands, etc., owned by the Anaconda represent net investments of over $5,000,000, and are therefore valuable assets of the company.

The Anaconda Copper Mining Company has a capital stock of $30,000,000, divided into 1,200,000 shares of $25 each, and the controlling interest is owned by the Amalgamated Copper Company. The present company was incorporated in 1895. Previous to that the properties were known as the Anaconda Mining Company, with a capital of $25,000,000, the original owners being Messrs. J. B. Haggin, Marcus Daly and the Hearst interest. The reorganized company paid its first dividend May 1, 1896, and since that date to November 16, 1903, has paid in dividends the aggregate sum of $23,250,000.

Operations began at the mines first about 1880 for silver. In that year a few hundred ounces of silver was obtained from the workings. In 1884 the copper production amounted to 3,886,000 pounds, and in 1885 it rose to 40,462,000 pounds. In ten years the output of copper more than doubled, and during the year 1897 the production of copper was 131,471,127 pounds.

The statement of the Anaconda Copper Mining Company, filed in Butte, for the purpose of taxation, covering the year ended June 1, 1903, shows the following results:

Gross proceeds		$14,597,852
Cost of mining	$4,862,420	
Freight on ore	208,925	
Cost of reduction	4,718,155	
Selling and refining	3,207,151	
Total expenditures		12,996,651
Net proceeds		$1,601,201

Operating statistics for the fiscal year ended June 1, 1903, were as follows:

Tons of ore extracted	1,382,835
Gross yield per ton	$10.48
Cost of extraction per ton	3.49
Cost of transportation to smelter	.15
Cost of reduction per ton	3.39

The gross yield per ton of $10.48 compares with $10.66 in 1902 and $14.20 in 1901.

The Anaconda paid out for labor $5,269,005, and for machinery and supplies $4,311,570.

The mines operated last year were the Anaconda, St. Lawrence, Never Sweat, Bell, Diamond, Mountain Consolidated and High Ore.

The Anaconda Company has declared a regular semi-annual dividend of 50 cents per share, payable November 16, 1903. Total dividends amount to $23,250,000.

The officers of the Anaconda Copper Mining Company are the following:

WM. SCALLON, *President.*
H. H. ROGERS, *Vice-President.*
W. G. ROCKEFELLER, *Treasurer.*
F. P. ADDICKS, *Assistant Treasurer.*
W. H. DUDLEY, *Secretary.*

Directors:

WM. SCALLON,
H. H. ROGERS,
A. C. BURRAGE,
W. ROCKEFELLER,
W. G. ROCKEFELLER,
W. L. BULL,
E. C. BOGERT.

Office, 52 Broadway, New York City.

UNITED STATES COPPER PRODUCTION.

BY DISTRICTS.

FOR THE YEARS 1901 AND 1902—IN POUNDS OF FINE COPPER.

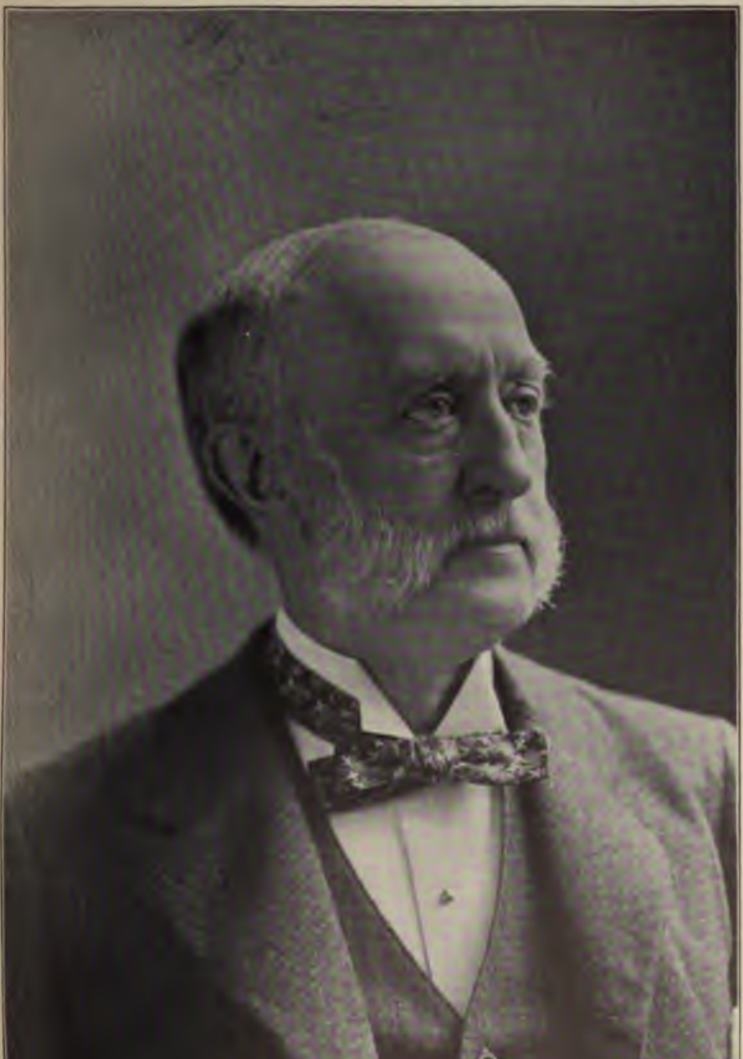
Official.

Year 1901.

Montana	233,031,948
Lake Superior	147,189,606
Arizona	120,099,268
Outside sources	93,856,000
Total	594,176,822

Year 1902.

Montana	268,497,775
Lake Superior	169,616,614
Arizona	117,364,878
Other States	22,570,041
Outside sources	84,224,000
Total	662,273,308



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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

COPPER MARKET REVIEW FOR THE YEAR 1902.

There were several paradoxical features apparent in the copper situation during the year under review. For example, there was the largest domestic consumption known, and exports exceeded anything on record, while the increase in production did not rise above the normal 10 per cent. rate, but the average market price of copper was fully 25 per cent. below that for the year 1901.

Support began to be gradually withdrawn from the market in December, 1901, and when January, 1902, came round the market was in a thoroughly demoralized condition. Early in January the Lake basis was nominally 12⅛, but the conviction had become deeply rooted that still lower prices were only a question of time, and with that sentiment widely prevalent trading was restricted. Before the first half of January had passed there was another drop to 11¼, and on the 15th of the same month prices stood at 11@11⅛ for Lake, 11 for Electrolytic, and 10¾ for casting. A few days later the market settled to 11 cents, and at that figure the buying became tremendous. Both the home and foreign trade took enormous quantities of copper at 11 cents, and that level marked the limit of the decline. At 11 cents the surplus stocks offered found a remarkably ready sale, and the strength of the buying soon sent prices up to 13¼ before the month of January expired.

Early in February the tone of the market was strong, and holders were cautious about accepting orders even at 13¼@13½. Subsequent offerings in large blocks, however, created an unsettled feeling, and the market began again to decline, and at the latter part of the month the selling basis was 12¼@12½. March opened at 12½, and the market remained quiet but steady for the first half of the month. During the last half of March conditions were dull, and with a limited demand eased off to 12¼@12⅜. In April the tone was easy at 12¼, and during the last half of the month a declining tendency developed, and Lake copper receded to 12 cents. Demand improved in May, and with a better inquiry prices rose from 12 to 12¾. At the beginning of June the market quoted 12⅝@12¾, but prices shifted slightly in buyers' favor, and closed quoting 12¼@12½. July was a dull month in the copper market. At the opening Lake was 12¼@12½. Sales were in limited volume, and the market gradually lost in tone. Closing prices were at 12@12⅛.

August was remarkably quiet, and values declined from 12⅛ to 11¾. Electrolytic weakened from 11.90 to 11⅜. A short lived spurt occurred in September, and the Lake price advanced from 11¾ to 12¼. The gain was almost entirely lost before the month ended. The interest shown in the publication of statistics giving stocks of copper was a feature in September. A more sanguine feeling led to considerable business, but a reaction soon followed. October came in quiet at 11¾@11.85, but a more pronounced demand and heavy transactions created an improved tone, and prices advanced to 12 cents. Owing to the withdrawal of inquiries and contraction in sales the usual recession in value followed, and when October closed prices were 10 to 20 points lower. There was fair buying of copper in November, but not sufficient to keep the market from gradually working lower. Opening quotations were 11.90@12, while at the close of November the Lake basis was 11.60. December was marked by considerable trading, and market values improved fractionally. There was a better sentiment apparent as the year drew to an end, and closing quotations were 12@12⅛, against 11.60 early in December.

CALUMET & HECLA MINING COMPANY.

The Calumet & Hecla has proved itself the greatest bonanza copper mine of the world. It has been in operation for the past thirty-one years under its present corporate title, but previous thereto the present consolidated property was operated by two distinct companies, known as the Calumet Mining Company and the Hecla Mining Company. The product has been derived from the conglomerate vein, and this lode has proved wonderfully rich. The same vein is found on adjacent mining properties, but it has turned out lean and unprofitable outside of the Calumet & Hecla territory.

The mining land of the company is extensive and consists of about 2,720 acres, having been increased about six years ago by the purchase of 120 acres of territory in the vicinity of shafts No. 6 and No. 7. The conglomerate belt has been operated from twelve shafts which follow the incline of the lode and one vertical shaft, known as the Red Jacket shaft. The latter is down 4,900 feet. It was started in 1889 and was completed to its present depth in 1896. It is fitted up as a six-compartment shaft, and buildings in keeping with its gigantic size surmount it on the surface. About nine or ten years ago the company gave up Calumet shafts Nos. 1 and 3 and Hecla shaft No. 1. These shafts were in the territory devastated by the fires of 1887 and 1888, which can now be equally well reached from Calumet No. 2 and Hecla No. 2.

The territory of the Calumet and Hecla is not only crossed by the famous Calumet conglomerate lode, but also by the Osceola and Kearsarge amygdaloid lodes, and as the property is about two miles in length the life of the mine is assured for many years to côme. In 1897 the company commenced to develop the Osceola amygdaloid vein, and five shafts have been sunk on that lode. These are Nos. 13, 14, 15, 16 and 17. Regular mining operations were continued until recently at the new shafts, but delay has been experienced in the delivery of machinery for operating the new shafts on the Osceola lode, and in the meantime underground work on this lode has been discontinued. The five shafts on the Osceola lode are two-compartment shafts, and about twenty miles of openings by drifts and shafts have already been made at the new workings. It is expected this new source of supply, when in full operation, will add anywhere from 13,000,000 to 20,000,000 pounds of copper annually to the Calumet & Hecla output.

During the fiscal year ending April 30, 1902, the Calumet & Hecla produced mineral equal to 42,462 642-2000 tons of refined copper, as against 37,932 1200-2000 tons for the year ending April 30, 1901. The small production of the latter year was due to the fire at the mine in May, 1900. The product in refined copper for the fiscal year ending April 30, 1902, was 79,964,066 pounds, as compared with 72,653,332 pounds for the previous fiscal year. The fire, which started at the nineteenth level in No. 2 Hecla shaft on May 27, 1900, necessitated the closing of the mine for three weeks, but No. 2 Hecla shaft had to be retimbered from the eleventh level downward, and did not go into commission again until March 1, 1901; this curtailed the output of the mine fully 10 per cent for nine months. The Red Jacket shaft was planned after two disastrous fires, with the end in view of carrying on independent mining operations through that opening, but the last fire, alluded to above, proved the futility of attempting such a thing while fire raged in another portion of the mine. The gases developed by the underground fire sank to the bottom of the openings, and, although the different subterraneous connections were closed and prevented the fire from spreading, nevertheless the noxious gases penetrated the levels and crosscuts, thus making it impossible to work until these difficulties ceased.

Although the Red Jacket shaft has proved very disappointing in furnishing absolute immunity from the contingencies arising in case of fire in other portions of the mine, it will, however, serve valuable secondary purposes for carrying on mining developments in the northern part of the property. The company intends to install a Kimberly hoist at the Red Jacket shaft at the fifty-seventh level, which will enable them to hoist from that station a large amount of rock on a plan similar to that in use at the De Beers mine. The management state that the other compartments of the shaft will be devoted to the service of the central part of the mine, in connection with Nos. 4 and 5 Calumet shafts. By adopting the De Beers system of underground haulage and hoisting at the Red Jacket shaft the output can be greatly increased. The character of the conglomerate lode in the vicinity of the Red Jacket shaft has not proved so rich as in the upper levels, and recent reports do not show any improvement in this respect.

The company operates two extensive smelting plants, one at Lake Linden, Michigan, and the other at Buffalo, New York. Both smelting establishments are equipped to treat copper on an enormous scale, and every necessary appurtenance is included in the works. A new mineral house and a larger cupola furnace were added to the Lake Linden plant recently, and five large furnaces rebuilt. There are four stone furnace buildings, 80 x 130 feet each, with four furnaces; a blister furnace building of stone, 50 x 70 feet, with two furnaces, and three mineral houses, with a capacity of about 18,000 tons. The Lake Linden smelting works occupy nearly thirty acres and are connected by rail with the stamp mills. At the Buffalo smelting works a new electrolytic plant has been completed and a new wharf built. The company has two stamp mills at Torch Lake, known as the Calumet mill and the Hecla mill, each containing eleven heads, with steam cylinders. At the stamp mills there are 988 19-100 acres.

The company has provided extra stamping facilities for the treatment of the output from the Osceola lode, and an additional building of steel 165 x 308 feet has been constructed at the south side of the Hecla stamp mill. The addition will contain six heads of powerful stamps, and with all the stamps in commission nearly 3,000 tons of rock per day can be treated. Electrical power will be used in operating the stamps. The mills are located at Torch Lake, and the water for washing the great quantity of rock treated is furnished principally by the famous triple-expansion engine "Michigan," which stands over 65 feet in height and has a pumping capacity of 60,000,000 gallons per day. Four other pumps, having each a capacity of from 10,000,000 to 22,000,000 gallons daily, are installed at the works for supplying water for the stamp rock. An enormous quantity of tailings from the stamping process has been accumulated, and as these tailings carry considerable copper an effort has been started by the company for the recovery of the metal contained in same. A new plant has been erected for the purpose, and it is expected that a fair quantity of copper will be obtained from the immense accumulation of Calumet & Hecla sands. The tailings at the lake stamp mills of the company are estimated as high as 25,000,000 tons. In later years more care has been taken to prevent a waste of metal through its escape in the tailings, but with the greatest precautions there is still a loss of copper in the stamping.

There have been several recent outbreaks of fire at the mines, but prompt action prevented disastrous consequences. In September and October, 1902, fires were discovered in abandoned and worked out stopes under suspicious circumstances, and the company has been aroused to redouble its precautions against incendiarism. The Calumet & Hecla was said to be recently treating about 6,000 tons of rock daily, and if the rock yielded 2½ per cent copper there would be obtained 150 tons of copper, or 50 pounds of copper per ton of rock stamped per day. This is at the rate of 90,000,000 pounds of refined copper per annum, for 300 working days to the year. The rock may possibly average a little higher than 2½ per cent copper. If, therefore, the total cost of production for Calumet & Hecla is 7 cents per pound, and the selling price is 12 cents per pound, the annual earnings would amount to $4,500,000, or $45 per share. If, however, production for the year should be only 80,000,000 pounds, net earnings on that output, as per above price basis, would amount to $4,000,000, or $40 per share. In case a profit of but 4 cents per pound is realized the annual net earnings on 80,000,000 pounds of output would be $3,200,000, or $32 per share. A 14-cent copper market would mean a much larger increase in profits.

The production, in refined copper, by the Calumet & Hecla during a series of fiscal years ending April 30 has been as follows, in pounds:

Fiscal year.	Pounds fine.
1902-3	76.632.912
1901-2	79,964,066
1900-1	72,653.332
1899-0	98,624,000
1898-9	88,901.133
1897-8	90.388,346
1896-7	92,475,595
1895-6	85.552,756
1894-5	62,466,414

It is understood that the Calumet & Hecla Company are to soon begin shaft sinking on the Kearsarge lode. The formation traverses the east side of the property, and there is ample territory for opening of a number of shafts of this lode if it proves as valuable a vein as at other properties. The Calumet conglomerate is the most westerly lode; east of it, at a distance of 750 feet, lies the Osceola Amygdaloid; east of the Osceola lode lies the Kearsarge lode.

During the year 1902 the Calumet & Hecla paid the following dividends: January 29, $10 per share; May 20, $5 per share; August 26, $5 per share; December 10, $5 per share. Total dividends in 1902 amounted to $2,500,000, or $25 per share. Dividends in 1901 were three in number, and for $15 per share each. During 1900 the company paid three dividends of $20 per share each and one of $10 per share, or $70 per share for that year. During the calendar year 1899 the Calumet & Hecla dividends aggregated $100 per share, or $10,000,000, in twelve months. The disbursements to stockholders for that year were equal to five years' dividends at the recent rate of $5 per share quarterly. Total dividends paid by the Calumet & Hecla amount to $82,350,000 up to September 24, 1903.

Calumet & Hecla Mining Company.

Statement of Assets and Liabilities April 30, 1902.

Assets.		
Cash at mine office		$154,025.30
Cash at New York office		15,000.00
Cash at Boston office, Exchange, copper at 11 cents per pound, and mineral at 4½ cents per pound		3,781,550.65
Insurance Fund		149,936.59
Bills receivable at Boston and mine		366,658.49
Liabilities.		$4,467,171.03
Drafts in transitu	$165,635.76	
Employees' Aid Fund	17,529.19	
Bills and accounts payable at Boston and mine	319,651.40	
Contracts for machinery	371,575.39	
		874,391.74
Balance April 30, 1902		**$3,592,779.29**

On December 31, 1902, the official records showed that there were 3,896 shareholders in the Calumet & Hecla Mining Company. There were seventeen shareholders, each owning 500 shares and above, and altogether 27,084 shares. There were individual holdings of 5,500 shares, 4,904 shares, 4,000 shares, 3,500 shares, and 1,060 shares.

The officers of the Calumet & Hecla Mining Company are:

ALEXANDER AGASSIZ, *President.*
THOMAS L. LIVERMORE, *Vice-President.*
GEORGE A. FLAGG, *Treasurer.*

Directors:

ALEXANDER AGASSIZ, FRANCIS L. HIGGINSON,
FRANCIS W. HUNNEWELL, QUINCY A. SHAW,
JAMES N. WRIGHT.

Eastern Offices, 12 Ashburton Place, Boston; 37 Wall Street, New York.

The annual meeting is held in Boston in August.

The company is capitalized at $2,500,000, divided into 100,000 shares of $25 each.

May 18, 1903, the directors of the Calumet & Hecla Mining Company declared a dividend of $10 per share, payable June 19, 1903. Total dividends declared and paid to June 19, 1903, aggregate $81,350,000.

The Calumet & Hecla started up its new stamp mill in May, 1903, and improvements at the old stamp mills will be made. Returns have appeared giving the production of the Calumet & Hecla Mining Company for the first four months of 1903 as 27,300,000 pounds of refined copper, which would be at the rate of 81,900,000 pounds per annum. The company could undoubtedly produce close to 100,000,000 pounds of refined copper a year if it was considered desirable to do so.

August 19, 1903, the Calumet & Hecla Mining Company declared a dividend of $10 per share, payable September 24, 1903. Total dividends amount to $82,350,000. At the meeting held August 19, 1903, former directors were re-elected. Three dividends have been paid during the calendar year 1903 to September 24, viz.: $5 March 10, $10 June 19 and $10 September 24.

CALUMET & HECLA MINING COMPANY. STATEMENT OF ASSETS AND LIABILITIES.

APRIL 30, 1903.

Assets.		
Cash at mine office		$116,380.98
" " New York office		15,000.00
" " Boston office, Exchange, Loans Receivable, copper at 14 cents per pound and mineral at 5 cents per pound		5,987,054.73
Insurance fund		600,275.70
Bills receivable at Boston and mine		509,584.41
Employees' Aid Fund		6,583.53
		$7,234,879.35
Liabilities.		
Drafts in transitu	$54,396.93	
Bills and accounts payable at Boston and mine	319,284.13	
Mill extension and contracts for machinery	304,174.50	
		677,855.56
Balance		$6,557,023.79

During the fiscal year ending April 30, 1903, the company produced mineral equal to 42,216 497-2000 tons of refined copper, as against 42,462 642-2000 tons the previous fiscal year. The price of copper varied from 11¼ cents to 15½ cents per pound. Four dividends of $5 each were paid during the fiscal year ending April 30, 1903, against two of $15 each and one of $10 during the previous year.

Under date of June 8, 1903, President Agassiz states that the character of the new openings on the conglomerate belt tributary to the Red Jacket shaft has, as in former years, been unsatisfactory. The company is preparing to sink a slope on the 57th level to work the northern part of the mine, known as the five forties. The six additional heads in the extension of the Hecla mill are now in commission. An important reduction in the cost of stamping, as well as a material saving in the tailings from the mill, has been accomplished. A new 60-foot sand wheel has been erected, and is running satisfactorily.

The production of the Calumet & Hecla for the first six months of 1903 is reported at 40,900,000 pounds of refined copper, and for the first nine months of 1903 at 60,200,000 pounds. The October, 1903, output is estimated at 6,000,000 pounds. Total production during first ten months of 1903 estimated at 66,200,000 pounds.

The Calumet & Hecla Mining Company has filed the following initial report of condition on June 30, 1903, with the commissioner of corporations, as required of foreign companies under the new corporation laws, cents omitted:

Assets.		*Liabilities.*	
Real estate and machinery	$17,977,064	Capital stock	$1,200,000
Cash and debts receivable	2,192,025	Accounts payable	557,005
Material and stock	4,054,079	Surplus	22,466,163
Total	$24.223,168	Total	$24,223,168

TOTAL WORLD'S COPPER PRODUCTION.
PER RETURNS.

SHOWING PER CENT OF INCREASE EACH YEAR.

Year.	Pounds.	Long tons.	Increase over previous year. Per cent.
1902	1,215,132,800	542,470	4.5
1901	1,162,085,120	518,788	7
1900	1,085,949,760	484,799	2.6
1899	1,057,826,560	472,244	9.9
1898	962,362,240	429,626	7.4
1897	895,395,200	399,730	7
1896	836,333,120	373,120	11.5
1895	749,425,600	334,565	3.1
1894	726,891,200	324,505	6.9
1893	679,907,200	303,530	*2.2
1892	695,457,280	310,472	11.1
1891	625,835,840	279,391	3.6
1890	603,579,200	269,455	3.1
1889	585,099,200	261,205	1.2
1888	577,978,240	258,026	15
1887	501,307,520	223,798	3
1886	486,272,640	217,086	*3.8
1885	505,326,080	225,592	2.4
1884	493,357,760	220,249	10.4
1883	446,669,440	199,406	9.7
1882	406,833,280	181,622	11.1
1881	365,946,560	163,369	6.1

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* Decrease.

BOSTON & MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.

The Boston & Montana is an exceptionally rich mine and has prospered wonderfully, particularly during the last five or six years. Since January, 1898, the company has paid $21,600,000 in dividends, and previous thereto $6,725,000, or an aggregate of $28,325,000 in dividends from July 28, 1888, to November, 1903. The company has a capital stock of $3,750,000, divided into 150,000 shares of $25 each, and during its 15 years of corporate existence has disbursed among its shareholders net profits amounting to over seven times its capitalization. Such is one feature of its financial record.

In regard to the physical character of the group of mines owned by the Boston & Montana, they rank among the most prolific and highly mineralized of any in the world. Notwithstanding the enormous production already secured from these mines during the period of their operation, there are still millions of tons of rich ore yet to be unearthed from the extensive mineral deposits underlying the company's property.

The Boston & Montana operated during 1902 the following mines: The Mountain View, Leonard, East Colusa, West Colusa and Pennsylvania. The Moose, another of its properties, was worked under lease last year. The

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management has been noted for its superior ability and progressive spirit.

The Mountain View mine is one of the chief producers belonging to the company. The main shaft is down 1,800 feet, has three compartments, and is equipped with two double-deck hoisting cages. The engine is an E. P. Allis, of 18 x 48 cylinder. There is a steel gallows frame 115 feet high surmounting the shaft. A Rand air compressor of 35 drill capacity is in use, and electric call bells. There are 15 exits, and connections with different other mines.

The West Colusa has a main shaft down 1,400 feet, with three compartments. There are two single-deck cages of two-car capacity. The engine is a Nordberg, 20 x 60 cylinder. Flashlights are used for signals. The mine is timbered with 12 x 12 and 10 x 10 square sets. There is a Nordberg pump on the 1,000-foot level having a capacity of 400 gallons. There are seven exits and connections with the Mountain View and the Leonard. A steel gallows frame is erected over this shaft, and is 60 feet high, with a 10-foot base.

The East Colusa mine has a main shaft down 900 feet. It has three compartments, with two single-deck cages, and a Lidgerwood engine, 10 x 12 cylinder. Flashlight call bells are used. The mine is timbered with 10 x 10 square sets, and there are four exits.

The Leonard mine is situated between the East and West Colusa and the Minnie Healy mines. The main shaft is three compartment, and is down 1,200 feet. There are two double-deck cages in use, and an E. P. Allis engine, 20 x 60 cylinder. There is a Nordberg air compressor of 75 drill capacity, and a Reidler pump on the 700-foot level having a capacity of 900 gallons per minute.

At the Pennsylvania mine the main shaft is down 1,500 feet, 400 feet of which was sunk since 1899. It has three compartments, with two double-deck cages, and E. P. Allis engine, 19 x 48 cylinder. The mine is timbered with 10 x 10 square sets, and is connected with the Mountain View, St. Lawrence and Silver Bow No. 1. The flashlight system is also in use in this mine.

The Moose mine is owned by the Boston & Montana Company, but has lately been operated under lease. The shaft is down 400 feet, 100 feet of which was sunk in 1902. The shaft is equipped with a 10 x 12 engine, and a single-deck cage with a 1-inch round rope.

The Boston & Montana mines are undoubtedly capable of being developed to a much greater depth than at present, and from present indications immense bodies of ore will be taken from levels much below those now opened up. In 1901 Mr. Frank Klepetko favored the installation of machinery which would be capable of hoisting from a depth of at least 3,500 feet. These mines will, therefore, continue to yield a large output for many years to come without question. The Boston & Montana has demonstrated its ability to mine copper and put it on the market at a very low cost, and as an asset of the Amalgamated Copper Company it is considered the best in the list of mines under its control.

Since the company was taken over by the Amalgamated Copper Company in June, 1901, the publication of the Boston & Montana's annual report has been suspended. The last report published by the company was that for the calendar year 1900. The report for that year showed gross receipts from sales of copper, silver, gold and bluestone amounting to $13,242,576.64; total expenses, exclusive of construction at Great Falls, including interest on bonded debt, less interest receipts, $5,081,192.65, and net income for year 1900 of $8,161,383.99. In that year there was expended for special construction at Great Falls $1,093,513.41, leaving amount applicable to dividends $7,019,781.27.

In 1900 Boston & Montana dividends were $43 per share, and amounted to $6,450,000, and the balance of assets December 31, 1900, was $5,665,872.91. As the aforementioned figures are those given in the last official report of operations published, they are herewith presented as forming an interesting item for future reference. During 1900 the Great Falls plant was increased over 50 per cent in capacity. The enlargements enabled the plant to treat 2,000 tons of concentrating ore, and from 300 to 400 tons of smelting ore, daily. Previous to this date the electrolytic plant was enlarged to treat up to 4,000,000 pounds monthly at less cost than before. Since the above additions were made further improvements have been added.

In June, 1901, the Amalgamated Copper Company acquired 137,888 shares of the capital stock of the Boston & Montana Company out of a total issue of 150,000 shares, the stockholders receiving four shares of Amalgamated stock for each share of Boston & Montana stock.

The earnings of the Boston & Montana Company for the year ending June 1, 1902, were reported for the purpose of taxation at $1,639,695. There were employed in 1902 in and around the mines of the Boston & Montana Company 1,158 men, of which number 982 worked underground, 153 at surface, and 23 engineers.

The Boston & Montana Consolidated Copper and Silver Mining Company filed with the county assessor at Butte, for purposes of taxation, its statement for year ended June 1, 1903, giving following details of operations:

Gross proceeds		$12,730,899
Cost of mining	$2,368,983	
Freight on ore	907,227	
Cost of reduction	2,767,042	
Selling and refining	2,634,180	
Total expenditures		8,677,432
Net proceeds		$4,053,467

Operating statistics were as follows for year ended June 1, 1903:

Gross yield per ton	$14.03
Cost of extraction per ton	2.16
Transportation to smelter per ton	1.00
Cost of reduction per ton	3.05
Ore extracted, tons	907,227

The distance from mines to smelter is 172 miles, the cost of transportation being $1 per ton. The company paid out for labor during the last fiscal year $2,824,814, and for machinery and supplies $2,311,211.

The mines operated were the Mountain View, Pennsylvania, West Colusa, East Colusa and the Leonard.

October 13, 1903.—The Boston & Montana Company has declared the regular quarterly dividend of $2 per share. Total dividends aggregate $28,325,000. The mines

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of this group form a magnificent asset in the Amalgamated holdings, and are exceedingly rich in ore.

The officers of the Boston & Montana Consolidated Copper and Silver Mining Company are:

A. S. BIGELOW, *President.*
W. J. LADD, *Secretary and Treasurer.*

Directors:

A. S. BIGELOW, W. J. LADD,
EDWARD S. GREW, JOSEPH S. BIGELOW,
EDWARD C. PERKINS.

Office, 199 Washington Street, Boston.

UNITED STATES COPPER PRODUCTION.

Production of copper in the United States from 1845 to 1902, inclusive:

Year.	Quantity. Pounds.	Year.	Quantity. Pounds.
1845	224,000	1874	39,200.000
1846	336.000	1875	40.320,000
1847	672,000	1876	42,560,000
1848	1,120,000	1877	47,040.000
1849	1,568,000	1878	48,160.000
1850	1,456,000	1879	51.520.000
1851	2.016,000	1880	60.480,000
1852	2,464.000	1881	71,680.000
1853	4,480,000	1882	90,640,080
1854	5,040,000	1883	117,151.795
1855	6,720.000	1884	147,805,407
1856	8,960,000	1885	170,962.324
1857	10.752,000	1886	162.263,043
1858	12,320,000	1887	185,227,331
1859	14,112,000	1888	231,270.622
1860	16,128.000	1889	231,966.214
1861	16.800,000	1890	265,780,133
1862	20,160,000	1891	295,812.076
1863	19,040.000	1892	352,971,744
1864	17,920,000	1893	339,785.972
1865	19,040,000	1894	364,866,808
1866	19,936,000	1895	385,913.404
1867	22.400,000	1896	465,961,430
1868	25,984.000	1897	506.078,274
1869	28.000.000	1898	546.262.987
1870	28.224,000	1899	587.341.440
1871	29.120.000	1900	602,082.880
1872	28,000.000	1901	594,171.200
1873	34.720.000	1902	662.273,308
Total 29 years	397,712,000	Total 29 years	7,770,274,472

Total quantity of copper produced in the United States during the last 58 years amounted to 8,167,986,472 pounds fine.

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PROF. JAMES DOUGLAS.

COPPER QUEEN CONSOLIDATED MINING COMPANY.

The Copper Queen Consolidated Mining Company is one of the principal and most successful companies in Arizona. The mines of this company are located at Bisbee, in the Warren district, and operations have been going on since September, 1880.

In its early history large bodies of carbonates and oxides were found, but in recent years the company has been treating the sulphurets as well. Sulphide ores carry a large percentage of sulphur in their composition. The carbonate ores can be reduced to bullion by a single smelting operation. The Copper Queen Company mixes the ores, from which it derives a product in the shape of pig copper 99 per cent fine. The production in fine copper for the year 1902 was 35,831,735 pounds, and this output compares with former years as follows:

Year.	Pounds, fine.	Year.	Pounds, fine.
1902	35,831,735	1897	23,999,873
1901	39,781,333	1896	23,298,150
1900	34,382,309	1895	15,741,731
1899	36,901,684	1894	12,688.372
1898	33,749,390	1893	13,795,618

From 1880 to the end of 1902 the total output of copper by the Copper Queen Company is estimated at 378,000,000 pounds.

The Copper Queen Company has been erecting new smelting works at Douglas, Ariz. The plant will have a capacity of 1,800 tons of ore daily, and 3,000-horsepower engines. It is expected to be ready to go into operation about January, 1904. As the Copper Queen ores average about 8 per cent., the new smelting plant will have a capacity of 288,000 pounds of copper daily, or about 8,000,000 pounds per month. Profitable sulphide ore bodies in the deeper limestones have been discovered at the Copper Queen, and they extend over a large area, the manager states, but as they dip southward they occur, unfortunately, at great depths. At the new location the smelting works will have abundance of water and a large area, with other requisite facilities for carrying on this branch of its business. Professor James Douglas is the able and active president and manager of the company, and gives his personal attention to the important details of operation at mines and smelter.

The Copper Queen has opened up rich deposits of ore in the new Lowell claim. Other claims belonging to the company show much promise at the depth of 800 feet. The Copper Queen is one of several copper mines operated and controlled by Messrs. Phelps, Dodge & Co. The capital of the company is $2,000,000, and articles of incorporation are under the laws of the State of New York.

The officers of the Copper Queen Consolidated Mining Company are:

JAMES DOUGLAS, *President.*
GEORGE NOTMAN, *Secretary and Treasurer.*

Directors:

JAMES DOUGLAS, C. H. DODGE,
WM. E. DODGE, A. C. JAMES,
D. WILLIS JAMES, GEORGE NOTMAN,
JAMES McLEAN.

Office, 99 John Street, New York.

The production of the Copper Queen for the first six months of 1903 was 19,380,945 pounds of black copper of about 99 per cent fine.

During July, August, September and October, 1903, the aggregate production for those four months was 11,494,800 pounds of black copper of about 99 per cent fine. Total production for the first ten months of 1903 was 30,875,745 pounds of black copper of about 99 per cent fine.

DIVIDENDS BY UNITED STATES COPPER COMPANIES.

Company.	Capital.	Number of shares.	Par value.	Dividends in 1902.	Dividends in 1901.	Total dividends.
Amalgamated	$155,000,000	1,550,000	$100	$3,875,000	$8,425,000	$19,800,000
Anaconda	30,000,000	1,200,000	25	1,200,000	3,900,000	22,050,000
Atlantic	2,500,000	100,000	25	———	80,000	940,000
Boston & Montana	3,750,000	150,000	25	900,000	5,250,000	27,125,000
Butte & Boston	2,000,000	200,000	10	———	600,000	1,600,000
Calumet & Hecla	2,500,000	100,000	25	2,500,000	4,500,000	79,850,000
Greene Consolidated	7,200,000	720,000	10	144,000	220,000	364,000
Montana Ore P. Co	2,500,000	100,000	25	323,332	722,000	2,646,000
Osceola	2,500,000	100,000	25	———	576,900	4,247,300
Parrot	2,300,000	230,000	10	114,925	1,365,000	5,749,423
Quincy	2,500,000	100,000	25	700,000	900,000	13,570,000
Tamarack	1,500,000	60,000	25	———	1,200,000	8,490,000
United Copper Company	*5,000,000	50,000	100	150,000	———	150,000
Utah Con	1,500,000	300,000	5	†510,000	732,000	1,242,000
Wolverine	1,500,000	60,000	25	240,000	240,000	990,000
				$10,657,257	$28,710,900	$188,813,723

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*Preferred; the United Copper Company has also $75,000,000 common stock. †Declared December, 1902, and paid January, 1903.

UNITED COPPER COMPANY.

The United Copper Company was incorporated during the year 1902 with an authorized capital stock of $5,000,000 preferred and $75,000,000 common, of which $5,000,000 preferred and $45,000,000 common stock have been issued.

The company was organized to take over all the bonds and large controlling interests in the Montana Ore Purchasing Company of Butte, Mont., and the other Butte copper properties in which the Messrs. Heinze were interested, comprising the Nipper Consolidated Mining Company, Corra-Rock Island Mining Company, Minnie Healy Mining Company and the Belmont Mining Company.

The production of these companies during the past two years has been reported slightly in excess of 30,000,000 pounds of copper a year, with the usual silver and gold contents of other Butte copper properties. The Rarus mine, which is the chief mine owned by the Montana Ore Purchasing Company, is regarded by the company as probably the richest mine in Butte, with the single exception of the Comanche mine, owned by the Boston & Montana, and through that company by the Amalgamated Copper Company. The other mines owned by the subsidiary companies of the United Copper Company are: The Minnie Healy, Snohomish & Tramway, the Nipper, Corra-Rock Island, Schweizer, East and West

L. E. R., Parnell, Fairmount, Balm, Blackfoot and a large number of undeveloped properties.

The smelting works of the Montana Ore Purchasing Company are situated at Butte, Mont., and are reported capable of treating 60,000,000 pounds of copper annually. The concentrating works were destroyed by fire during August of 1902, and as the Montana Ore Purchasing Company was able to make an arrangement for the treatment of its ores at Basin, Mont., it was decided not to rebuild the works at Butte.

The total dividends paid by the Montana Ore Purchasing Company to November 1, 1903, amount to $3,132,300.

The United Copper Company paid its first dividend on its preferred stock on November 1, 1902, and also another dividend of $150,000 May 1, 1903, and has accumulated a very handsome cash surplus from the operations of the past year. It has no debt of any kind. The production of copper by the United Copper Company during the first five months of 1903 was 11,500,000 pounds. The average, therefore, was 2,300,000 pounds per month, which would make the total for the year 27,600,000 pounds. There was a cave in one of the company's largest mines, but it is expected that production during balance of 1903 will be more than sufficient to bring the total for the year up to the usual figure of 30,000,000 pounds.

The official returns give a production for the first ten months of 1903 of 22,850,000 pounds of copper. The company paid a semi-annual dividend of 3 per cent on its preferred stock on November 2, 1903. Total dividends by the United Copper Company amount to $450,000.

The officers of the United Copper Company are:

F. AUGUSTUS HEINZE, ***President and General Manager.***
ARTHUR P. HEINZE and JOHN MACGINNISS, ***Vice-Presidents.***
STANLEY GIFFORD, ***Secretary and Treasurer.***

The chief offices of the company are at the Hudson Trust Company building, Hoboken, N. J., and at Butte, Mont., and the Montana Ore Purchasing Company maintains a New York office at No. 31 Nassau street, New York City.

F. AUG. HEINZE.

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HIGHEST AND LOWEST PRICES OF COPPER.

Lake Ingot Copper. *New York.* *Cents per pound.*			*Cash Standard or G. M. B. Copper.* *London.* *£ per ton of 2,240 pounds.*		
Year.	**Highest.**	**Lowest.**	**Highest.**	**Lowest.**	**Year.**
1902	13½	11	56 15 0	49 12 6	1902
1901	17	13	72 17 6	47 0 0	1901
1900	17¼	16	79 10 0	69 2 6	1900
1899	19¼	13¼	79 2 6	58 1 3	1899
1898	13¼	11	57 8 9	48 6 3	1898
1897	12	10¾	51 15 0	47 0 0	1897
1896	12	9¾	50 8 9	40 10 0	1896
1895	12¼	9.35	47 8 9	38 13 9	1895
1894	10¼	9	43 0 0	37 17 6	1894
1893	12½	9.60	46 16 3	40 12 6	1893
1892	12⅝	10½	47 18 9	43 10 0	1892
1891	15	10¼	56 10 0	44 1 3	1891
1890	17¼	14	61 12 6	46 10 0	1890
1889	17½	11	80 0 0	35 0 0	1889
1888	17.60	15.85	105 0 0	73 0 0	1888
1887	17¾	9.95	85 5 0	37 7 6	1887
In 16 years.	19¼	9	105 0 0	35 0 0	In 16 years.

UNITED STATES AND FOREIGN COPPER PRODUCTION—YEAR 1902.

In Tons of 2,240 Pounds Fine.—Official Returns.

1902.	United States. Tons.	Foreign reporting mines. Tons.	Total domestic and foreign. Tons.
January	18,955	7,367	26,322
February	20,331	8,475	28,806
March	24,035	8,979	33,014
April	24,624	10,169	34,793
May	25,763	9,354	35,117
June	26,740	8,202	34,942
July	26,749	9,210	35,959
August	25,296	9,504	34,800
September	25,788	9,155	34,943
October	26,252	9,707	35,959
November	25,297	9,077	34,374
December	25,826	9,676	35,502
Total twelve months	295,656	108,875	404,531

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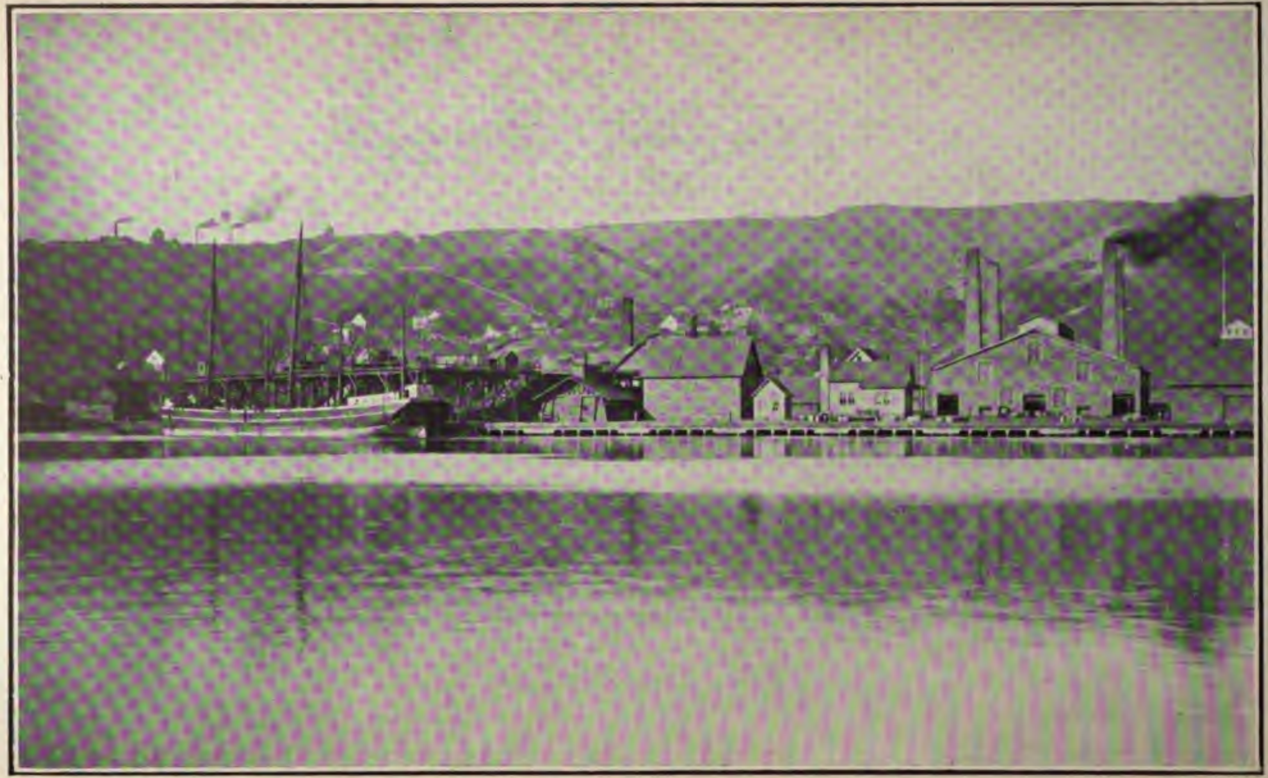


QUINCY SMELTING WORKS, HANCOCK, MICH.

QUINCY MINING COMPANY.

The Quincy mine is one of the best known and most successful among the Lake Superior copper properties. It is 55 years since the company had its inception, and during that period it has produced 300,614,144 pounds of copper, from the sale of which it derived $44,613,914.66. The product of the mine in 1902 was 26,425,670 pounds of mineral, yielding 18,988,491 pounds of refined copper. Its banner year for production was 1901, when the output of refined copper amounted to 20,540,720 pounds. Production for the past three years was as follows:

Year.	Mineral. Pounds.	Refined copper. Pounds.	Copper in mineral %.
1902	26,425,670	18,988,491	71.8
1901	27,778,268	20,540,720	73.9
1900	18,491,749	14,116,551	76.3

Recent improvements on a large scale have been made by the Quincy company, and these betterments have cost over $1,500,000. A new stamp mill and a fine modern smelting plant are among the additions made since 1898. The entire mining equipment is now of a superior character and eminently well fitted to produce the best results at a minimum cost.

Operations are conducted principally at shafts Nos. 2, 6 and 7. Shaft No. 4 is working mostly from the upper levels, and shaft No. 8, on the Mesnard location, is undergoing construction. No. 2 shaft is down 58 feet below the fifty-seventh level, 18 feet having been sunk in 1902. This shaft is the deepest on the property. Long crosscuts have been made from No. 2 shaft to the main vein, and a "secondary shaft" has been sunk from the fifty-seventh level to the fifty-eighth level, through which all rock taken from the fifty-eighth level tributary to the No. 2 shaft is hoisted to the fifty-seventh level, thence to surface, in main shaft. The management intend to sink this "secondary shaft" for two levels and then make connection with the main shaft. This plan does away with the necessity of making a long crosscut at every alternate level. Drifting was done in the lower levels north and south last year, and at the fifty-second and fifty-first levels north. Most of the openings at No. 2 made in 1902 yielded stamp rock of average quality.

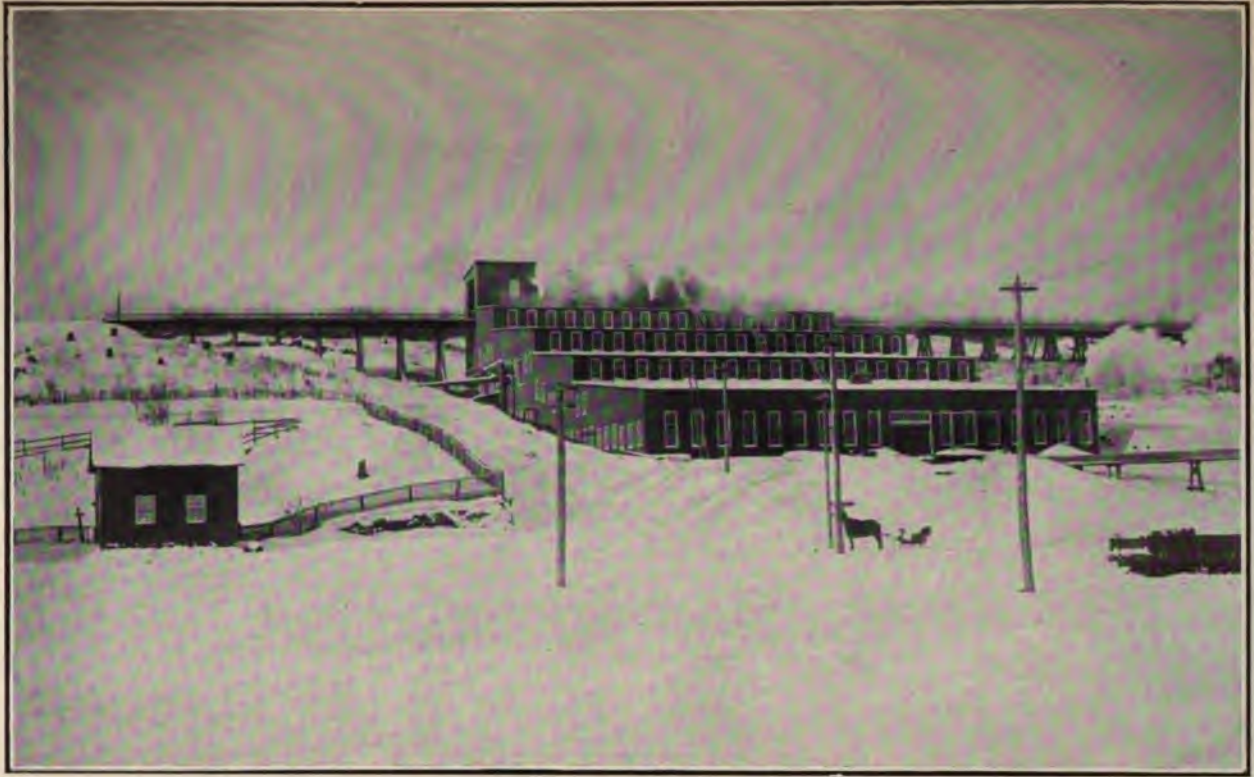
No. 4 shaft reached the fifty-first level in 1898, and at that depth the capacity of the hoisting engine reached its limit, since which time there has been no further sinking done at this shaft. Drifting, however, was done last year at the fiftieth level south on "foot branch," and at the twenty-ninth level south on main vein. Stoping was also done at different levels from the No. 4 shaft, mostly with good results in 1902.

No. 6 shaft is down to 30 feet below the fifty-seventh level, having been sunk 100 feet last year. This shaft is on the "North Quincy" property, or what was formerly the Pewabic mine. When the Quincy came into possession of the Pewabic in March, 1891, this shaft was straightened and enlarged. Drifting was in several of the deepest levels last year, and fair stoping ground was found at most of the new openings. The principal stoping at No. 6 in 1902 was done at different points between the thirty-second and forty-seventh levels, where the greater number of these stopes yielded good quality of stamp rock and a fair proportion of mass copper. No. 6 shaft is one of the principal shafts at the mine. It is about 1,900 feet north of shaft No. 2, and is within about 200 feet of the Franklin mine.

No. 7 shaft was begun in December, 1897, and is a curved shaft. In opening this shaft work was commenced in the lower levels, and operations were carried on in different sections at the same time. No. 7 is down to 34 feet below the fifty-fifth level. The openings on drifts last year were for the most part in vein of full average productiveness. Several amygdaloid veins were passed through at the fortieth level by a crosscut in 1902, but nothing of value was discovered. At the forty-fourth level the so-called "new west lode" was run across in 1901, but it has not proved of particular value so far. No. 7 is equipped with a direct double acting engine, 52 x 84 inches, having a capacity of 8,000 feet of 1½ inch steel rope. A stone engine house, 58 x 94 feet, was erected in 1899 for the hoisting machinery at No. 7 shaft, also a boiler house, 56 x 75 feet, constructed of steel, containing four Wicks vertical water tube boilers of 250 horse-power each. A steel compressor building, 52 x 66 feet, containing two Rand cross compound steam and air compressors, having a capacity of 60 drills each, has been added to this part of the mine. A new machine shop, 62 x 145 feet, of stone, brick and steel, has been erected near the compressor plant. A combination shaft and rock house, with steam hammer, rock breakers and other equipments, was completed at this shaft, and the No. 7 plant went into regular service in October, 1900.

No. 8 shaft is a new one in course of construction on the Mesnard portion of the Quincy's property, and was unwatered in July, 1899. It was enlarged and strengthened from the surface, and at a depth of 244 feet the first level was opened and driven north and south. At the end of 1902 it was down to the fifteenth level, 587 feet having been sunk last year. The openings lately made at this shaft have at times shown vein of good character and quality, as the superintendent reports, but on the whole it was low grade. The vein tributary to No. 8 shaft, however, has indicated improvement recently as depth is attained.

The Quincy company started up its new stamp mill in December, 1900. The building is 132 x 216 feet, built of steel, and fitted with three heads of stamps of the latest type. A new 16,000,000 gallon Allis pumping engine and other necessary facilities for the new stamp mill were provided for its complete equipment. The first head at the new stamp mill was started December 5, 1900; the second December 26, 1900, and the third head January 9, 1901. The Quincy's old stamp mill is situated only a short distance from the new mill, and is equipped with five heads of stamps. Both mills are now in full operation. Several important changes and improvements have recently been completed at the stamp mills, and others are under way,



NEW STAMP MILL NO. 2, QUINCY MINING COMPANY.

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ASTOR, LENOX AND
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for the purpose of reducing the cost of stamping and the saving of copper in the waste tailings.

The company built its own smelting works in 1898, and since the end of that year they have been smelting their own copper at the new works. There are four furnaces at the smelting works, which make it equal to present requirements. The fourth furnace was added in 1900. Everything about the smelter is first class in every respect. A new frame warehouse, 50 x 248 feet, was built in 1902 for the storage of refined copper. The erection of a suitable mineral house will probably be begun soon for the temporary storage and more economical handling of the mineral, the intention being to use cars instead of barrels for the transportation of all mineral from the stamp mills to the smelting works.

In the latter part of 1901 the company introduced electric haulage in the underground levels of the mine, and the new feature has proved satisfactory. Last year there were in commission four electric locomotives and 36 steel cars of 2¾ tons capacity each, and the company are so well pleased with this new method of underground haulage that they are preparing for the operation of 10 additional electric locomotives, which were recently ordered from the General Electric Company. About 50 per cent. of the stamp rock mined tributary to No. 6 shaft is now handled by the new electric system. The method has given excellent results, and has been the means of considerably lowering the cost per ton for haulage of rock to shaft. It is intended to transport the greater portion of rock mined from the stopes and drifts by electric haulage. Bins of approximately 500 tons capacity are being constructed at the most productive levels on the hanging side of shaft for filling skips direct. Several of these are now in commission, and save time and prove more satisfactory than operating with tram cars.

During the year 1902 the quantity of rock raised from the Quincy mine was 984,594 tons, against 924,173 tons in 1901. The average number of employes at the mine and works in 1902 was 1,636 men, of which number 562 were miners. The average wages of miners on contract per month last year was $62, which was also the rate paid in 1900 and 1901.

Total receipts during the calendar year 1902 from sales of copper were $2,275,819.25. In addition thereto there was realized from interest and Hancock real estate account $31,096.89. Aggregate expenses, including $96,124.08 reserved for construction from earnings of 1901, amounted to $1,808,916.09, leaving the net income for the year $498,000.05. The Quincy Mining Company paid $700,000 in dividends in 1902, and had a balance of assets January 1, 1903, to the amount of $880,360.04. A dividend of $2.50 per share was paid February 16, 1903, and $3.00 per share on August 15, 1903. Total dividends to that date amount to $14,120,000.

The production of refined copper by the Quincy Mining Company in September, 1903, was 1,525,915 pounds.

In October, 1903, the Quincy received additional electric equipment for use in the mine. The company has now some fourteen or fifteen electric locomotives and about seven miles of underground electric tram lines.

Production, Profits, Dividends and Balance of Assets of the Quincy Mining Company.

For Last Thirteen Years.

Year.	Production in mineral. Pounds.	Production in refined copper. Pounds.	Mining profit.	Dividends paid.	Balance of assets on Dec. 31.
1890...	10,002,850	8,064,253	$581,080	$400,000	$742,045
1891...	12,827,075	10,542,519	393,203	450,000	707,015
1892...	13,621,815	11,103,926	279,633	300,000	653,210
1893...	17,708,035	14,398,477	493,399	350,000	714,424
1894...	18,864,754	15,484,014	590,055	400,000	907,011
1895...	19,732,970	16,304,721	692,074	600,000	1,007,500
1896...	20,370,725	16,863,477	755,628	1,000,000	927,564
1897...	20,630,625	16,924,618	720,767	800,000	1,211,171
1898...	20,056,942	16,354,061	649,578	650,000	1,229,275
1899...	17,866,680	14,301,182	882,087	950,000	1,207,942
1900...	18,491,749	14,116,551	1,033,623	900,000	757,817
1901...	27,778,268	20,540,720	1,519,232	900,000	1,082,359
1902...	26,425,670	18,988,491	563,027	700,000	880,360

Quincy Mining Company.

Official Statement of Assets and Liabilities, Exclusive of Real Estate, Mine Plant and Supplies in Use January 1, 1903.

Assets.

Cash and copper		$563,168.03
Accounts receivable		285,910.91
		$849,078.94

Liabilities.

Drafts unpaid	$34,338.95	
Accounts payable in New York	24,717.18	
Accounts payable at mine	164,689.89	
		223,746.02
		$625,332.92
Add at mine:		
Supplies per inventory on file	$243,724.58	
Teams, etc.	4,314.65	
Accounts receivable	6,987.89	
		255,027.12
		$880,360.04

GENERAL SUMMARY OF RECEIPTS AND EXPENDITURES OF THE QUINCY MINING COMPANY FROM ITS ORGANIZATION TO DECEMBER 31, 1902.

EXPENDITURES.	
For Expenditure on location previous to 1856	$42,097.98
" " on Quincy vein, 1858, not now worked	55,000.00
" Openings and explorations on 3,800 feet, east or Pewabic vein, extending to Portage Lake, preparatory to future work	11,500.00
" Real estate and permanent improvements on same, including dwelling-houses, stamp mills, machinery, steam engines, railroad, dock, warehouse and other buildings and roads	4,679,374.71
" Mining and surface labor, expenses of smelting and marketing copper, and all incidental expenses.	27,411,950.70
Balance carried down	14,450,360.04
	$46,650,283.43

RECEIPTS.	
From Capital stock paid in	$200,000.00
" do. do. (Scrip)	1,250,000.00
" Proceeds of copper and silver (300,614,144 pounds copper)	44,613,914.66
" Interest	308,452.91
" Profit on sale P. L. & R. Improvement Company stock, and other investments	79,637.16
" Sales, real estate, Hancock, Mich	198,278.70
	$46,650,283.43

Balance brought down, being receipts over expenditures	**$14,450,360.04**
Deduct dividends declared, Nos. 1 to 68 inclusive.	**13,570,000.00**
Makes balance as per statement on preceding page	**$880,360.04**

WILLIAM R. TODD.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

The officers of the Quincy Mining Company are:

WILLIAM R. TODD, *President.*
CHARLES J. DEVEREAUX, *Vice-President.*
W. A. O. PAUL, *Secretary and Treasurer.*

Directors:

CHARLES J. DEVEREAUX, WALTER P. BLISS,
ISAAC H. MESERVE, CLEVELAND H. DODGE,
WILLIAM R. TODD, DANIEL T. BRIGHAM,
DON M. DICKINSON.

Office, No. 45 Broadway, New York.
Mine Address, Hancock, Mich.
Transfer Agent, Old Colony Trust Company, Boston.

The Company was incorporated by special charter of the State of Michigan, March 30, 1848; organized under the Mining Law of the State of Michigan, March 6, 1878; capital stock, $2,500,000, in 100,000 shares of $25 each.

Production of Quincy Mining Company.

In Pounds of Refined Copper.

	1902.	1901.
January	1,680,857	1,449,463
February	1,550,019	1,529,633
March	1,358,240	1,763,722
April	1,538,487	1,737,920
May	1,662,949	1,732,527
June	1,554,749	1,781,049
July	1,583,925	1,768,182
August	1,649,834	1,751,845
September	1,722,381	1,757,938
October	1,641,562	1,754,351
November	1,580,469	1,770,791
December	1,465,019	1,743,299
Total twelve months	18,988,491	20,540,720

Production of the Quincy Mining Company for the first half of 1903 was as follows, in fine copper:

January	1,506,312	pounds.
February	1,514,276	"
March	1,495,371	"
April	1,451,093	"
May	1,475,770	"
June	1,443,534	"
Total six months	8,886,356	pounds.

The Quincy output of refined copper in July, 1903, was 1,467,719 pounds, and for August, 1903, 1,514,679 pounds. In September, 1903, the production of copper was 1,525,915 pounds.

UNITED STATES COPPER PRODUCTION. BY MONTHS.

The following is the United States copper production, as per the official returns of the Copper Producers' Association, since July, 1892, the date when these returns began. The figures include the output of reporting mines, and estimated outside sources, in tons of 2,240 pounds fine copper:

1892.	Reporting mines.	Outside sources (estimated).	Total, long tons.
July	9,294	924	10,218
August	10,807	870	11,677
September	9,710	994	10,704
October	9,668	1,289	10,957
November	9,888	1,036	10,924
December	9,872	1,174	11,046
Total six months	59,239	6,287	65,526

1893.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	9,187	989	10,176
February	8,213	1,042	9,245
March	9,065	1,321	10,386
April	11,775	1,042	12,817
May	12,706	1,042	13,748
June	11,524	1,042	12,566
July	11,049	1,042	12,091
August	11,745	1,042	12,787
September	11,750	1,042	12,792
October	11,503	1,042	12,545
November	10,705	1,042	11,477
December	10,538	1,042	11,580
Total twelve months	129,760	12,730	142,480

UNITED STATES COPPER PRODUCTION.—CONTINUED.

1894.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	10,832	1,340	12,172
February	10,245	1,340	11,585
March	13,759	1,340	15,099
April	12,475	1,340	13,815
May	12,668	1,340	14,008
June	13,972	1,340	15,312
July	12,639	1,340	13,979
August	11,815	1,500	13,315
September	11,257	1,500	12,757
October	12,692	1,500	14,192
November	11,044	1,600	12,644
December	9,145	1,600	10,745
Total twelve months	142,543	17,080	159,623

1895.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	10,094	1,600	11,694
February	11,120	1,600	12,720
March	12,553	1,600	14,153
April	11,944	1,600	13,544
May	13,260	1,600	14,860
June	11,641	1,100	12,741
July	12,524	1,100	13,624
August	14,290	1,100	15,390
September	14,251	1,100	15,351
October	15,045	1,100	16,145
November	15,330	1,100	16,430
December	13,445	1,100	14,545
Total twelve months	155,497	15,700	171,197

1896.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	14,872	1,200	16,072
February	16,316	1,200	17,516
March	16,722	1,200	17,922
April	15,912	1,200	17,112
May	15,533	1,200	16,733
June	14,825	1,200	16,025
July	15,395	1,200	16,595
August	15,600	1,200	16,800
September	15,777	1,200	16,977
October	16,958	1,200	18,158
November	15,165	1,200	16,365
December	16,419	1,200	17,619
Total twelve months	189,474	14,400	203,894

UNITED STATES COPPER PRODUCTION.—CONTINUED.

1897.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	16,937	700	17,637
February	16,119	700	16,819
March	17,583	700	18,283
April	16,554	900	17,454
May	17,805	1,000	18,805
June	18,653	1,000	19,653
July	14,244	1,100	15,344
August	16,309	1,100	17,409
September	16,343	1,100	17,443
October	16,341	1,200	17,541
November	16,227	1,200	17,427
December	21,091	1,200	22,291
Total twelve months	204,206	11,900	216,106

1898.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	16,544	1,200	17,744
February	16,072	1,250	17,322
March	19,131	1,250	20,381
April	21,609	1,300	22,909
May	21,391	1,350	22,741
June	17,940	1,450	19.390
July	14,452	1,600	16,052
August	17,908	1,600	19,508
September	17,064	1,700	18,764
October	19,429	1,700	21,129
November	18,050	1,800	19,850
December	16,632	1,850	18,482
Total twelve months	216,222	18,050	234,272

1899.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	16,774	1,850	18.624
February	17.899	2,000	19,899
March	19.918	2,000	21.918
April	17,854	2,100	19,954
May	19,832	2,250	22.082
June	19,710	2,300	22,010
July	18,533	2,800	21,333
August	19,886	2.800	22,686
September	19,515	3,200	22,715
October	20,680	3,300	23,980
November	19,817	3,400	23,217
December	20,388	3,400	23,788
Total twelve months	230.806	31,400	262,206

UNITED STATES COPPER PRODUCTION.—CONTINUED.

1900.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	17,613	3,400	21,013
February	17,497	3,400	20,897
March	19,883	3,400	23,283
April	20,667	3,400	24,067
May	19,282	3,400	22,682
June	19,235	3,400	22,635
July	19,612	3,400	23,012
August	17,667	3,400	21,067
September	17,986	3,400	21,386
October	19,945	3,400	23,345
November	19,876	3,400	23,276
December	18,724	3,400	22,124
Total twelve months	227,987	40,800	268,787

1901.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	19,279	3,400	22,679
February	17,700	3,400	21,100
March	19,984	3,400	23,384
April	18,038	3,400	21,438
May	18,892	3,500	22,392
June	18,901	3,500	22,401
July	18,585	3,400	21,985
August	19,267	3,400	22,667
September	18,080	3,500	21,580
October	20,498	3,600	24,098
November	18,128	3,600	21,728
December	16,003	3,800	19,803
Total twelve months	223,355	41,900	265,255

1902.	Reporting mines.	Outside sources (estimated).	Total, long tons.
January	15,155	3,800	18,955
February	16,931	3,400	20,331
March	20,335	3,700	24,035
April	20,824	3,800	24,624
May	21,763	4,000	25,763
June	22,740	4,000	26,740
July	22,749	4,000	26,749
August	23,196	*2,100	25,296
September	23,688	2,100	25,788
October	24,152	2,100	26,252
November	22,997	2,300	25,297
December	23,526	2,300	25,826
Total twelve months	258,056	41,600	295,656

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* The decrease in "Outside sources" is caused by the largest of them becoming "Reporting mines."

The publication of the official figures of the monthly copper production in the United States was discontinued by the Copper Producers' Association in January, 1903.

TAMARACK MINING COMPANY.

The production of the Tamarack mine for the year 1902 was 15,961,528 pounds of fine copper, which compares with 18,000,852 pounds in 1901. There was more rock mined in 1902 than in 1901, but much of the ground opened last year was below the average grade, and hence the product in refined copper fell off. It has been officially stated, however, that large areas of ground are still to be opened that are in line with the productive stretches that have been mined in the past. Furthermore, the territory that is still unopened is so extensive that if only a small percentage of it proves productive a bright future is assured for the property. This was the expressed conviction of the late superintendent, Captain William E. Parnall.

Operations at the Tamarack mine are carried on at five shafts. These are all vertical shafts, and each sunk to a great depth. The Calumet conglomerate and the Osceola amygdaloid lodes underlie the Tamarack property, but neither lode outcrops on the company's territory. It was, therefore, necessary to sink through much unproductive ground before reaching the vein. The company owns about 1,160 acres of mineral land adjoining the Calumet & Hecla on the west. The dip of the Calumet conglomerate lode is about 37½ degrees. The first shaft on the Tamarack property was started in 1882, and reached the copper shoot after about two and a half years at a depth of 2,300 feet. Mining began in 1885, and the company paid its first dividend April 2, 1888, amounting to $120,000. During the same year other dividends were paid, the total disbursements to shareholders in 1888 alone amounting to $440,000. Many additional dividend payments have since been made, and these are noticed in another place.

The depths of the several shafts January 1, 1903, were as follows:

	Feet.
No. 1 Shaft	3,409.0
No. 2 Shaft	4,355.5
No. 3 Shaft	4,892.0
No. 4 Shaft	4,450.0
No. 5 Shaft	4,938.0
Total depth of five shafts	22,044.5

No. 1 shaft was sunk 57 feet in 1902, and during the same year No. 2 shaft was sunk 106 feet and No. 3 shaft 93 feet. The new No. 5 shaft reached its present depth of 4,938 feet in 1901. The sinking of this shaft was begun August 7, 1895, and is the most important work ever undertaken by the company. The lode at No. 5 shaft was cut December 20, 1900, at the depth of 4,662 feet, and at that time was found as rich as the management expected it to be. In 1902 5,600.5 feet of drifting on the conglomerate lode at No. 5 shaft was done, but the new territory opened up in that part of the mine did not show up as rich in copper contents as had been hoped. There is a large area of unexplored ground contiguous to No. 5 shaft, and the company intend to push development work at this point as rapidly as possible, in order to prove up the quality of the vein more thoroughly at the new shaft.

The quantity of rock mined at the Tamarack for the year 1902 was 837,568 tons, against 773,783 tons in 1901. Rock stamped last year amounted to 658,720 tons, compared with 626,905 tons in 1901, and the mineral obtained in 1902 was 25,747,931 pounds, against 29,998,094 pounds during the year previous. The yield of fine copper in 1902 was 15,961,528 pounds, and that in 1901 was 18,000,852 pounds. Total cost per pound of refined copper in 1902 was 11.90 cents, against 11.67 cents in 1901.

A great deal of money has been expended for new construction and equipment at the Tamarack property during recent years, and the mine is fitted out to do good work and handle a large output. On the low market for copper ruling during the greater part of 1902 the company only received an average of 11.87 cents per pound for its copper, and if it had not been for interest receipts and other income there would have been a small deficit on the year's operations. Construction expenses during the past five years amount to $1,289,931.73.

The new steel shaft and rock house at No. 5 shaft was completed in 1901. The engine and rock crushers were also installed, ready to go into commission when required. A duplicate hoist for this shaft has been contracted for, and the new engine and a large new compressor are to be delivered soon. The compressor will have a capacity of 100 drills, and will have a foundation of solid concrete. The boiler house contains six boilers, having a combined capacity of 1,200 horse-power. No. 5 shaft is five-compartment, 7 feet 2 inches by 27 feet 5 inches. It has four cageways and a ladder and pipeway. The distance between No. 4 shaft and No. 5 shaft is 3,300 feet. A four-cylinder type Nordberg engine, 32 inch by 56 inch stroke, operates the hoist at No. 5 shaft. The drum is 25 feet in diameter, tapering to 16 feet at the ends, and can carry 6,000 feet of 1½-inch rope.

Tamarack Operations.

	1902.	1901.	1900.	1899.	1898.	1897.
Rock mined for the year, tons.....	837,568	773,783	766,058	775,532	812,983	726,665
Rock stamped for the year, tons..	658,720	626,905	625,422	631,090	670,832	611,539
Mineral obtained for the year, lbs.	25,747,931	29,998,094	31,738,405	31,713,752	31,127,623	29,580,380
Cost of stamping per ton of rock, cents	23.299	24.953	31.479	22.727	22.402	26.413

The Tamarack Mining Company completed a new stamp mill in 1897. It is located near the old mill and is equipped with two 20-inch cylinder heads of the Ball type. The old mill is fitted with five 20-inch cylinder heads, built on solid foundations. The latest mill is a steel structure, while the older mill is of wood. Stamping operations were carried on without interruption during the year 1902, with satisfactory results. The cost of stamping last year, viz., 23.299 cents per ton, was the lowest since 1899, and is considered a good showing for conglomerate rock, especially in view of the present prices for labor and supplies.

The development at No. 5 shaft in the Tamarack must be necessarily slow, as only two men can work at the same time in cross-cutting on the lode. No matter how much money or skill may be back of an enterprise of this character, it takes time to fully explore and develop a great property like the Tamarack. With its extensive undeveloped territory the Tamarack has yet much new ground to open up. Tamarack's daily rock shipments in October, 1903, were reported at close to 2,100 tons, showing an increase of 20 per cent over a few months previous.

Tamarack Mining Company.

Assets and Liabilities.

Assets.

Cash at Boston	$58,395.19	
Copper on hand (3,091,448 pounds) sold, but not paid for	363,000.00	
Accounts receivable at Boston	121,769.51	
Cash and accounts receivable at mine	91,983.43	
Supplies on hand at mine	275,195.27	
Wood and timber lands	259,134.79	
Hancock & Calumet Railroad Company 5 per cent bonds	99,000.00	
Mineral Range Railroad Company stock	250,000.00	
Lake Superior Smelting Company stock	100,000.00	
		$1,618,478.19

Liabilities.

Accounts payable at mine		$211,150.22	
Bills payable at Boston	$17,506.00		
Accounts payable at Boston, including advances on copper	807,856.09		
		825,362.09	
			1,036,512.31
Balance of assets December 31, 1902			$581,965.88

Comparative Results for 1901 *and* 1902.

	1901.	1902.
Tons rock mined	773,783	837,568
Tons rock hoisted	688.622	763,209
Tons rock stamped	626,905	658,720
Pounds mineral obtained	29,998,094	25,747,931
Percentage refined copper in mineral	60.006	61.991
Pounds refined copper per ton of rock hoisted	26.1	20.9
Pounds refined copper per ton of rock stamped	28.7	24.2
Product fine copper, pounds	18,000,852	15,961,528
Cost per pound at mine, excluding construction	8.48c.	9.51c.
Cost per pound construction	1.56c.	0.97c.
Cost per pound of smelting, freights, eastern expenses, commissions and all other charges	1.63c.	1.42c.
Total cost per pound of refined copper	11.67c.	11.90c.
Cost of mining per ton of rock	$1.97	$1.81
Cost of mining per ton of rock stamped	$2.44	$2.30
Cost of stamping per ton hoisted	22.72c.	20.109c.
Cost of stamping per ton stamped	24.953c.	23.299c.

Assets and Liabilities for 1901 *and* 1902.

	1901.	1902.
Assets, including copper sold, but not paid for	$2,421,460.09	$1,618,478.19
Liabilities, including advances on copper	1,881,924.76	1,036,512.31
Balance of assets	$539,535.33	$581,965.88

The directors of the Tamarack Mining Company submit the following report of the operations of the company for the year ending December 31, 1902:

Gross value of fine copper produced (15,961,528 pounds at 11.87 cents)			$1,894,320.75
Balance of interest receipts and other income			47,586.51
			$1,941,907.26
Running expenses at mine		$1,518,044.60	
Smelting charges	$128,098.92		
Transportation	47,939.08		
Commissions and miscellaneous copper charges	27,690.05		
Miscellaneous expenses at Boston	22,826.32		
		226,554.37	
			1,744,598.97
Profit			$197,308.29
Balance of assets December 31, 1901			539,535.33
Total			$736,843.62
From which deduct:			
Construction expenses			154,877.74
Balance of assets December 31, 1902			$581,965.88

The following figures of copper production by the Tamarack Mining Company have appeared for the first half of 1903, in pounds:

January	1,300,000 lbs.
February	1,260,000 "
March	1,300,000 "
April	1,223,000 "
May	900,000 "
June	1,020,000 "
Total six months	7,063,000 lbs.

July, August and September, 1903, output aggregated for the three months named 3,044,000 pounds of copper. It was reported in October, 1903, that results from No. 5 shaft at the Tamarack Mine are constantly improving, and improvement is also noted at the north end of the mine.

Dividends Paid by Tamarack Mining Company.

Year.	Number.	Amount.	Year.	Number.	Amount.
1888.......	3	$440,000	1895.......	2	$400,000
1889.......	4	640,000	1896.......	2	360,000
1890.......	4	590,000	1897.......	2	360,000
1891.......	4	800,000	1898.......	2	480,000
1892.......	3	600,000	1899.......	2	600,000
1893.......	3	600,000	1900.......	2	1,020,000
1894.......	2	400,000	1901.......	2	1,200,000

Total dividends paid from organization of company to December 31, 1901, aggregate $8,490,000. There were no dividends in 1902. Present capitalization is $1,500,000, divided in 60,000 shares of $25 each.

Officers of the Tamarack Mining Company are as follows:

A. S. BIGELOW, *President.*
W. J. LADD, *Secretary and Treasurer.*

Directors:

A. S. BIGELOW, W. J. LADD,
D. M. ANTHONY, JOSEPH S. BIGELOW,
J. HENRY BROOKS, EDWARD S. GREW,
W. E. PARNALL.

Office, 199 Washington Street, Boston.

The annual meeting of stockholders is held on the first Thursday in May in each year.

It was stated at the annual meeting May 7, 1903, that No. 5 shaft is down between 5,100 and 5,200 feet. There has been some disappointment in the developments at this shaft to date, but the company was recently taking pay rock out of No. 5 shaft, and if copper continues to bring in the neighborhood of 15 cents the Tamarack is expected to do very well during the year 1903. It costs more to mine from a deep shaft than from a shallow one. The hoisting costs more, and the plant necessary to do the work is more expensive. The 60,000 shares of Tamarack stock are distributed among 1,288 shareholders, and of this number twenty-two interests each own blocks of 500 shares and over.

EXPORTS OF COPPER BY COUNTRIES.

Exports of copper from the United States by countries, as per official Government returns, were as follows:

For Calendar Year.

Exported. Ingots, bars, etc.	1902. Pounds.	1901. Pounds.	1900. Pounds.
To United Kingdom	88,972,029	36,819,100	63,522,445
To Belgium*	8,431,560	4,561,405	—
To France	63,519,881	34,607,042	67,725,989
To Germany	56,604,753	37,487,180	67,384,848
To Italy*	9,108,904	5,045,775	—
To Netherlands*	96,358,472	61,752,002	—
To other Europe	28,539,742	11,954,923	137,447,152
To British North America	2,811,835	1,377,955	1,616,778
To Mexico	251,812	217,437	296,684
To other countries	69,861	427,009	15,855
Total ingots, bars, etc.	354,668,849	194,249,828	337,973,751
Copper in matte reduced at 55 per cent:			
To United Kingdom	6,172,320	16,853,760	7,246,400
To Germany	—	29,120	369,600
To Mexico	16,045,120	6,952,960	4,560,640
To other countries	—	322,560	150,080
Grand total exports	376,886,289	218,408,228	350,300,471
Total value	$44,718,931	$34,229,112	$56,617,876

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* Included in "Other Europe" prior to January, 1901.

EXPORTS OF COPPER.—Continued.

For Calendar Year.

Exported. Ingots, bars, etc.	1899. Pounds.	1898. Pounds.	1897. Pounds.
To United Kingdom	50,675,849	88,443,870	64,811,843
To France	58,450,866	53,909,508	59,630,864
To Germany	49,285,139	42,891,345	29,746,200
To other Europe	87,098,288	104,749,556	122,313,139
To British North America	985,525	1,523,505	596,157
To Mexico	285,222	253,975	114,886
To other countries	45,442	184,146	42,653
Total ingots, bars, etc	246,826,331	291,955,905	277,255,742
Copper in matte reduced at 55 per cent:			
To United Kingdom	1,444,800	6,032,320	9,856,000
To Germany	2,464	2,464	———
To Mexico	3,167,360	5,343,200	———
To other countries	———	29,568	1,310,400
Grand total exports	251,440,955	303,363,457	288,422,142
Total value	$41,633,155	$34,354,312	$31,826,974

For Calendar Year.

Exported. Ingots, bars, etc.	1896. Pounds.	1895. Pounds.
To United Kingdom	65,888,751	24,064,694
To Germany	27,535,951	14,962,257
To France	53,703,798	25,266,032
To other Europe	111,518,392	56,236,915
To British North America	419,495	398,906
To Mexico	135,667	151,664
To West Indies and Bermuda	———	1,721
To other countries	21,870	246,201
Total ingots, bars, etc	259,223,924	121,328,390
Copper in matte reduced at 55 per cent:		
To United Kingdom	21,886,880	16,889,600
To Germany	1,232	138,880
To other countries	922,880	———
Grand total exports	282,034,916	138,356,870
Total value	$30,216,194	$13,854,020

COPPER STATISTICS FOR THE YEAR 1902.

Price of Lake Copper.
New York.
In the Regular Market.

1902. Month.	Highest. Cents per lb.	Lowest. Cents per lb.
January	13	11
February	13½	12¼
March	12½	12¼
April	12¼	12
May	12¾	12
June	12¾	12¼
July	12½	12
August	12⅛	11⅝
September	12¼	11¾
October	12¼	11¾
November	12	11.60
December	12⅛	11.60
Year	13½	11

Price of Cast Standard Copper.
London.

1902. Month.	Highest. £ per ton.	Lowest. £ per ton.	Sales reported. Tons.
January	55 10 0	45 7 6	22,700
February	56 15 0	52 5 0	19,750
March	54 15 0	51 15 0	10,075
April	53 17 6	52 0 0	13,290
May	55 7 6	52 10 0	15,900
June	54 12 6	52 10 0	9.325
July	53 7 6	52 7 6	9,370
August	52 18 9	51 7 6	8,025
September	54 7 6	51 13 9	14.475
October	53 5 0	51 11 3	13,525
November	52 3 9	49 12 6	14,600
December	52 15 0	49 12 6	17,275
Year	56 15 0	49 12 6	168,310

European Copper Supplies and Deliveries for the Year 1902.

1902. Month.	Total supplies. Tons.	Total deliveries in Europe. Tons.
January	20,415	18,754
February	25,762	25,046
March	29,145	24,594
April	28,026	29,139
May	22,968	25,220
June	26,702	27,382
July	28,274	29,930
August	18,203	19,141
September	23,434	25,664
October	20,953	21.541
November	22,597	22,547
December	22,100	22,200
Year	288,579	291,158

Total Visible Supply of Copper in England and France and Afloat Thereto from Chili and Australia.

1902. Date.	Visible supply Tons.	Price of cash standard copper. £ per ton.
January 1	22,051	49 0 0
February 1	23.312	56 15 0
March 1	23,573	53 5 0
April 1	28,124	52 17 6
May 1	27,011	52 12 6
June 1	24.264	54 12 6
July 1	23,219	52 15 0
August 1	21,313	52 18 9
September 1	20,275	51 15 0
October 1	17,245	52 6 3
November 1	16,657	52 2 6
December 1	16,707	49 12 6
Jan. 2, 1903	16,570	53 8 9

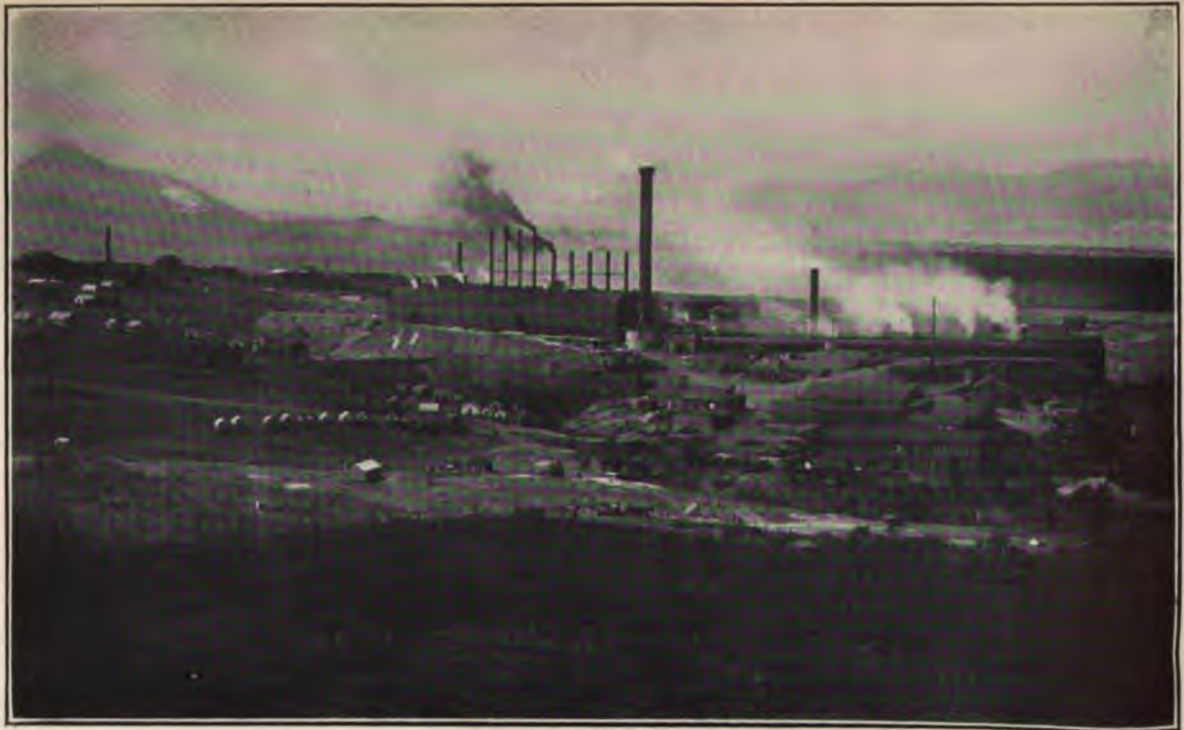
GREENE CONSOLIDATED COPPER COMPANY.

This company was organized September 15, 1899, under the laws of West Virginia, with an authorized capital of $5,000,000, and afterwards increased to $6,000,000. In November, 1902, the capital stock was again increased, to $7,200,000, divided into 720,000 shares of $10 each. The latter is the present capitalization of the company.

The Greene Consolidated Copper Company has one of the greatest copper properties ever opened up anywhere, and great as is its present development the indications are that it has not yet reached the zenith of its possibilities.

The territory of the company's mineral lands at Cananea, Sonora, Mexico, aggregates 10,408.58 acres. Only a portion of this large area has been developed. Production was begun in January, 1901, and during the first month of operation the company produced but 43,000 pounds of copper matte, containing about 22,000 pounds of fine copper. In a little more than a year thereafter the production in one month amounted to 6,914,004 pounds of copper matte, containing 3,195,528 pounds of fine copper and 27,487 ounces of silver.

The company continued to make its product into matte until June, 1902, but since then the production is in the shape of copper bullion. It is said that the bullion all runs



GENERAL VIEW OF SMELTER IN 1902 OF THE GREENE CONSOLIDATED COPPER CO,

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

over 99 per cent fine copper. During the fiscal year ending July 31, 1903, the production was as follows:

Product.	Quantity.
Ores extracted	333,329 tons
Pure copper in bullion	42,310,544 pounds
Silver	397,426 ounces
Gold	2,392 ounces
Total gross value	$5,706,191.98

Of the above product 12,424,696 pounds of copper were sold between August 1, 1902, and January 31, 1903, realizing $1,454,500. For the six months commencing February 1, 1903, and ending July 31, 1903, there were sold 26,819,947 pounds of copper, realizing $3,592,126.32, or a total of $5,046,626.67. The average price of copper for the first above mentioned was 11.7 cents per pound. For the latter period of six months, the average selling price was 13.39 cents per pound.

In addition, there were sold 295,845.67 ounces of silver, realizing $149,153.12, being an average price of 50.45 cents per ounce. During the same period there were sold 1,650.961 ounces of gold, at $19.797 per ounce, realizing $32,684.44.

There remained on hand unsold on August 1, 1903, 3,065,874 pounds of copper and 101,581 ounces of silver, which, on the basis of last sales, had a value of $477,727.75. The net extraction of copper was 130 pounds of refined copper per ton of ore treated.

During the fiscal year ending July 31, 1903, the company paid in dividends $432,000, being 6 per cent upon the capital stock.

The ore reserves of the different mines belonging to the company have been largely increased, and a conservative estimate of the ore in place on the properties belonging to the company, now exposed, as estimated by the Manager of the Reduction Division, Mr. James H. Kirk, gives 10,136,994 cubic yards, in Capote, Oversight, Veta Grande and Elisa zones. Deducting 50 per cent of the tonnage for waste streaks, barren ore and other contingencies, it would leave 5,068,497 cubic yards of ore in place, which, estimating 12 cubic feet in place as the equivalent per ton, would give 11,404,120 tons of ore available.

The first furnace was started in January, 1901, and the fourth furnace at Smelter was started December 13, 1901. At the time of the organization of the company the plant at Cananea consisted of one smelting furnace of 100 tons daily capacity, a small engine and boiler, and rotary blower, and with this equipment the production of matte amounted to from five to ten tons per day. All machinery, coke and supplies had to be hauled from Naco, a distance of forty-three miles, at a cost of about $12 per ton. The product of the smelter was hauled to the same point at a cost of about $5 per ton.

Since then a wonderful transformation has been accomplished, completely changing the aspect of the place where the mines are located. Development work has been carried on with all possible vigor, and on a most extensive scale. New and adequate facilities for extracting and reducing the ore have been provided; the mines have been equipped with the necessary hoisting machinery; an efficient reduction works has been built; a standing gauge railroad has been constructed between Cananea and Naco, which connects with the El Paso and Southwestern Company, and other important improvements have been made which bear witness to the thorough manner the management has adopted in placing the entire plant on a first-class modern footing for successful mining.

In addition to the mineral lands already mentioned the company owns 486,000 acres of grazing and timber land. An area of ground has been deeded to the Cananea municipality, which has been incorporated and completely organized. In the municipality the company owns 828 building lots, and has sold 588 lots at a total selling price of $57,727.27. The company obtained decisions in its favor from the Supreme Court of Mexico in the litigation known as the "Cobre Grande Suits," where the right of title to several mines was questioned. After these favorable decisions the property was redenounced, and final patent issued directly to the Cananea Consolidated Copper Company by the Mexican Government, thereby rendering this title secure against any future attack. The two cases in the Arizona courts, known as the Hallenborg suits, were decided in favor of the company, and the company reported that there were no suits pending affecting the title to any of its property.

Operations have been carried on at eight main working shafts. The principal mines now worked are the Capote, Oversight, Veta Grande and the Elisa. These four mines are furnishing the bulk of the output at present, and the ore from same is said to average about 12 per cent copper. The mines are worked by both shafts and tunnels, and the openings reveal enormous quantities of ore. The great

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extent of the property has led the company to divide the different mineralized sections into zones. Five separate and distinct mineral zones have been opened up and worked, and these are known as the Cobre Grande, Veta Grande, Esperanza, Capote and Puertecitos.

The Cobre Grande mine is equipped with two good hoists, and 1,314 feet of vertical work and 4,510 feet of horizontal work have been done. At this mine large bodies of concentrating ore have been exposed. The quality of this ore is less desirable metallurgically than the ores from other portions of the property, but whenever the time arrives when it is considered advisable to use them they are ready to be drawn upon. The present working shaft at the Cobre Grande is furnishing about 400,000 gallons of water per day to the smelter.

The Veta Grande is about a mile and a half northeast of the Cobre Grande. It was first worked through shafts Nos. 3, 4 and 6, which were sunk in the hanging wall of the ledge. Ore was exposed at seventy feet, and at the first level it was said that the stretch of vein laid bare reached a length of more than 600 feet. These shafts have been connected by a drift, and a main working shaft 540 feet east of Shaft No. 4 has been sunk below the third level. This shaft is a three compartment one 4½x5 feet in the clear, and is known as Shaft No. 5. The third level intersected the ore body at 218 feet from the shaft, showing the ledge had straightened from a dip of 37 degrees to one of 74 degrees. A double-track motor tunnel has been driven 986 feet, connecting with work from Shaft No. 5. At the third level a body of high-grade ore 86 feet in width by 410 feet in length was exposed, assaying from 10 to 12 per cent copper. The character of the ore on this part of the property is described as native copper and black sulphides, with some streaks and bunches of copper glance and red oxide. It is valued for its desirable concentrating qualities, and the mine manager states it can be treated profitably in this manner when carrying as low as 3 per cent copper. Shaft No. 5 is equipped with a 115 horsepower double hoist.

Farther to the northwest is the old Chivatera mine, where a large amount of development work has been done. Beyond this is the Esperanza. The intention is to open ground in this zone from shafts at the Capote mine at a depth of 500 to 600 feet.

The Capote zone has been opened by several shafts and tunnels. At shafts Nos. 2, 4, 6 and 8 sinking has been pushed rapidly. About 610 tons of ore of smelting or concentrating grade was extracted daily from the Capote mine. The portion carrying 10 per cent copper or higher is sent directly to the smelter, and the remainder is concentrated. About 10,000 feet of timber was used in this mine daily, and the subterraneous workings in the famous Capote have the appearance of an underground forest, with posts from 18 inches to 2 feet in diameter, with cap and sill above and below, meeting the eye in every direction. The main double-track, working tunnel on the Capote zone has been extended during the past fiscal year to 4,460 feet from the portal. A four-compartment shaft has also been sunk upon the Capote zone, intended to take the place of No. 2 Capote shaft, which had become inadequate for handling the large tonnage being taken. This shaft has been thoroughly equipped with a modern hoisting plant capable of sinking to a depth of 3,000 feet, and has been connected with levels 1, 2, 3 and 4 on the Capote zone.

The original Capote ore body has been shown to be as much as 225 feet in width, where cross-cut work has been done, and at other places the width was 165 feet and 186 feet. The strike, trend and characteristics of the ore in the several sections of the Capote zone have been found to be identical.

To afford direct and cheap tramming as well as another outlet to the Veta Grande and Oversight zones, Veta Grande Tunnel No. 9 was started during the past year. The president of the company says this tunnel will accommodate 10-ton electric cars and will intersect the Oversight ore body at a point 186 feet below the level of No. 9 Capote Tunnel, and 1,046 feet below the crest of the hill, thus thoroughly ventilating the lower workings of the Oversight and Capote, and giving direct discharge at a point much nearer the smelting and concentrating works.

The Elisa, 1,500 feet north of Capote shaft No. 2, is in a limestone formation, the ore being a chalcopyrite. The Elisa is now one of the principal producers of the Greene Company, and is operated by both shafts and tunnels. All ore from the Elisa workings has been hoisted to surface through shaft No. 3, but arrangements have been made to take the ore from this mine through two tunnels directly to the bins on the line of the railway, and from thence to the smelter.

The Puertecitos zone is four miles northwest of the Elisa shaft. A large amount of development work has been done by means of shafts and tunnels, exposing ore reserves sufficient for many years' extraction. The Ventura and Jaurez mines are in this zone, and the Elenita mine is 900 feet west of the Jaurez. The characteristic ores of the Puertecitos zone are bornite, copper pyrites and carbonates in a lime-alumina-garnet gangue. The Puertecitos outcrop is about 800 feet in width, and the bottom of the shaft is 730 feet below the outcrop above the old tunnel. Work was resumed upon the Puertecitos end of the property in June, 1903, and there are about 80 tons per day of first-class ore now being treated from that end of the property.

The mineral claims of the company amount to 4,214 pertenencias of 2 47-100 acres each. Boundary lines and permanent monuments have been completed and erected on the property that can be easily traced a total distance of 32½ miles. The company has two sawmills in operation, with a capacity of 14,000 feet per day.

A complete telephone system is established connecting the several departments, mines and offices, extending from the Puertecitos camp to Naco. The system comprises some 200 miles of wire, about half of which is copper, and about 100 instruments in use. A new brick hospital of two stories, and provided with beds for 50 patients has been completed on the company's property. The building is 40x100 feet, and is equipped with the most modern appliances. Four surgeons are attached to the medical corps. There is also an emergency hospital at the Capote mine. The company has also established a yard where the bricks used in the erection of the smelter and power plant and various other buildings have been made. The capacity of this yard is 35,000 bricks per day.

The mercantile department, general offices and bank are accommodated in a substantial brick building. There is a foundry capable of melting about 4,000 pounds of iron at a heat, where castings for repair work can be obtained promptly.

The reduction works of the Greene Consolidated Copper Company comprises power plant, smelters, converters and other appliances on a scale calculated for the production of 6,000,000 pounds of copper per month. The enlargement of the smelter was completed in September, 1903. There are now seven furnaces, and the smelter capacity is 100 tons of copper per day.

The concentrator in 1902 had a capacity of 600 tons of ore per day, and is located on the line of railway between the mines and the reduction works. The process employed is that of wet crushing and water concentration, and the production of concentrates was from 100 to 200 tons per day, according to the character of ore treated. The equipment includes: Two 10x20 inch Blake crushers, two 16x36 inch Cornish rolls; four 14x27 inch Cornish rolls; four 36 inch single compartment Hartz jigs; two 36 inch double compartment Hartz jigs; forty-four concentrating tables; four slime tables; 250 incandescent lights, and storage tanks of 200,000 gallons capacity. The mill was designed and built in two independent sections of 300 tons capacity each, and each section can be thrown in or out of commission by simply turning a hand wheel, as they are both driven by the one source of power. The arrangement also permits of detaching any individual piece of machinery without interfering with the general operation. The capacity of the mill can be increased to 1,200 tons per day with about an expenditure of one-fourth of the original cost.

Power for the concentrator is furnished by four high-pressure tubular boilers of 100 horsepower each, and a Corliss type tandem-compound condensing engine of 250 horsepower. The boiler house is separate from the concentrator building for greater safety from fire.

The concentrating plant is now being remodeled and its capacity largely increased. It is expected by July, 1904, that the present improvements will be completed, thereby giving a concentrating capacity of 2,000 tons per day.

The ores of this property contain no zinc or arsenic, and the problem of concentration consists of the elimination of the silica and alumina. The presence of silica and alumina in ore necessitates the use of considerable flux, lime or iron, in smelting. By concentration the silicious and alumina contents are removed, and the percentages of copper, iron and sulphur in the concentrates largely increased. Concentrates having these valuable elements do not require the use of barren material for fluxing purposes in the operation of smelting.

The engines for furnishing the air blast for the smelting furnaces are a compound double-blowing Nordberg engine, steam cylinders 13 and 24 inches, air cylinders 57 and 57 inches, stroke 42 inches, having a capacity of 20,000 cubic feet of free air per minute and of 225 horse-power; one

Murray-Corliss type tandem-compound engine of about 380 horsepower, and a capacity of 30,000 cubic feet of free air per minute; one Murray-Corliss engine of similar type and about 121 horsepower, and a capacity of 12,500 cubic feet of free air per minute. In addition to the above there are three other engines with a combined capacity of 30,000 cubic feet of free air per minute. The total capacity of the blowing engine plant is 92,500 cubic feet of free air per minute, at a blast pressure of 2½ pounds per square inch, and requiring 1,100 horsepower capacity. The furnace building is steel frame covered with corrugated iron, and 33 feet wide by 296 feet long. It is planned for eight patent hot-blast furnaces, of which seven are now in operation.

The converter building is 60 feet wide by 326 feet long and adjoins the smelter building on the north. It is also of steel frame covered with corrugated iron. There are five stands for the converter shells, and twenty-two converter shells 11 feet diameter by 13 feet long of 1 inch steel plate. All the facilities exist for the successful operation of this great establishment. All the buildings, machinery and equipment suggest colossal operations, and the aim is to secure the efficient and economical administration of this great mining property. The ore deposits at this celebrated mine are truly enormous, and development and equipment will necessarily be on the same gigantic scale. In September, 1903, it was officially stated that the mine development has much more than kept pace with the ore extraction, the ore reserves being at least double what they were one year ago.

During the past fiscal year a pumping plant has been established and a pipe line constructed from the head of the Sonora River, a distance of 9¾ miles, and it is now completed, an ample supply of water having been continuously pumped for the past three months (since June, 1903). As completed, this line would raise the water 967 feet, with a capacity for elevating 1,750,000 gallons per day. This supply will be ample for all uses for some time to come.

A new dust chamber and stack has been erected at the reduction works, and is now in operation. A briquetting plant, with a capacity of handling 400 tons of fines per day, is now being completed.

The number of stockholders on July 31, 1903, was 2,799, against 2,526 on July 31, 1902. There has been practically no material change in the personnel or holdings of the stockholders of the company during the past year, with the exception of about 80,000 shares of stock formerly held by Messrs. Logan, Mitchell and Treadwell, which stock is now held (September, 1903) by the new members of the Executive Committee of the company.

The production of the Greene Consolidated Copper Company for the first eight months of 1903 was as follows:

First Eight Months, 1903.

Product.	Quantity.
Copper, pounds	30,828,000
Silver, ounces	247,000
Gold, ounces	1,526

During June, July and August, 1903, the production of copper bullion was over 4,000,000 pounds per month. That for July was 4,232,000 pounds, and that for August 4,449,000 pounds. It is expected that by the end of 1903 the company will be producing at the rate of 6,000,000 pounds of copper bullion per month.

All the product of the Greene Consolidated Copper Company is handled by the United Metals Selling Company and refined by the Raritan Copper Works at Perth Amboy, N. J.

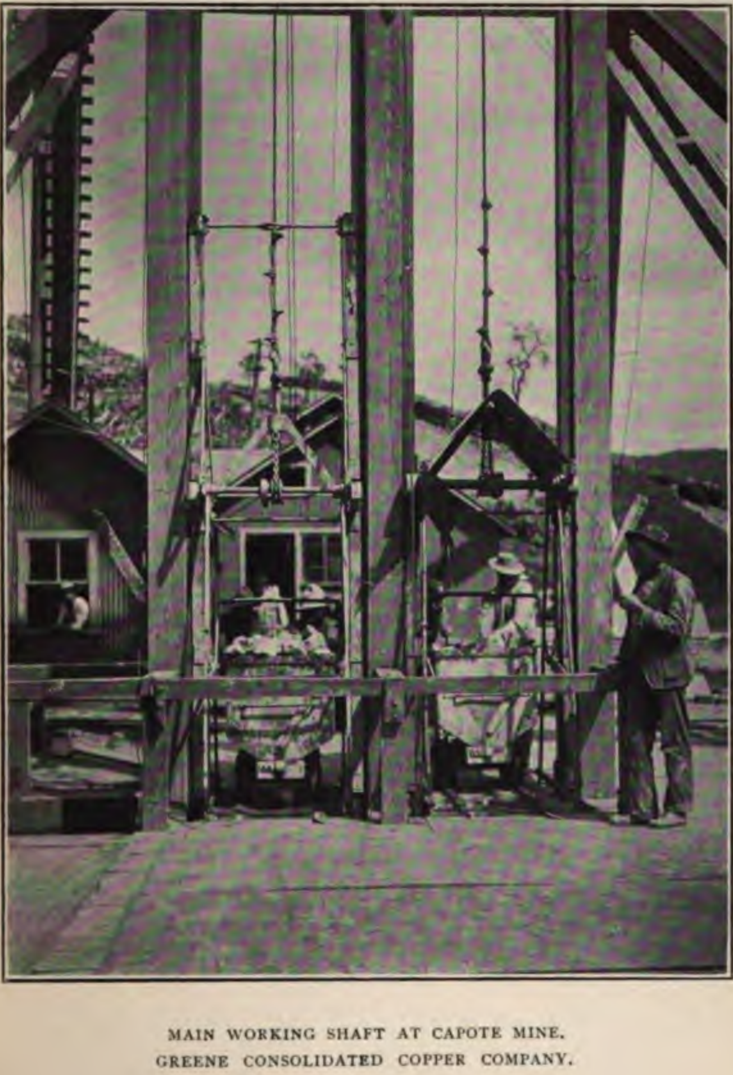
The magnitude and value of this property will be further appreciated in the near future as the enterprise gets under full swing. The energy displayed in guiding and administering its complex affairs and bringing the property to its present development in so short a time is in keeping with the spirit of this strenuous age.

The Cananea Consolidated Copper Company, S. A., is the foreign corporation, the stock of which is all owned by the Greene Consolidated Copper Company.

Consolidated Balance Sheet Showing the Combined Assets and Liabilities of the Greene Consolidated Copper Company and the Cananea Consolidated Copper Company, S. A.—July 31, 1903.

Assets.

Cash in offices and banks		$72,325.84	
Due from banks and bankers		8.598.16	
Notes receivable		66.343.41	
Mortgage loans of Banco de Cananea		10,819.52	
Accounts receivable		441,081.50	
Supplies and merchandise		852,558.21	
		$1,451,726.64	
Product	$1,833,396.04		
Less advances against consignments	1,538,153.03		
		295,243.01	
Total quick assets			$1,746,969.65
Investments at Cananea (net, with departmental capital allotments, etc., out)		$8,359,140.42	
Cananea Consolidated Copper Co. stock, purchase price		5,000,000.00	
Furniture and fixtures		2,968.18	
Total fixed assets			13,362,108.60



MAIN WORKING SHAFT AT CAPOTE MINE.
GREENE CONSOLIDATED COPPER COMPANY.

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TILDEN FOUNDATIONS

Treasury stock			3,500.00
Items in suspense		$74,976.69	
Items in transit between Greene Co. and Cananea Co.		116,811.48	191,788.17
			$15,304,366.42
Liabilities.			
Notes payable		$287,646.06	
Due to banks and bankers by Banco de Cananea		173,978.07	
Due to depositors by Banco de Cananea		186,523.78	
Accounts payable		327,721.38	
Accrued labor		184,935.57	
Libretas outstanding		11,443.65	
Total current liabilities			$1,172,248.51
Hospital fund			4,505.37
General reserves (for depreciation, etc.)		$446,657.01	
Reserves against consignments		750,648.13	
Total reserves			1,197,305.14
Working capital, being proceeds of 182,000 shares given to the company by W. C. Greene for that purpose		$2,151,834.29	
Share premium, being amount realized from sales of stock in excess of par		3,543,745.00	
*Net gains on the operations of the year, after throwing $750,648.13 into reserves		817,102.46	
*Against consignments		$6,512,681.75	
Dividends paid	$432,000.00		
Loss and gain from previous year	350,374.35		
		782,374.35	
Net surplus		$5,730,307.40	
Capital stock		7,200,000.00	
Total capital and surplus			12,930,307.40
			$15,304,366.42

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*The reserve against consignments, amounting to $750,648.13, has been created during the year to provide for the difference between the market value of the bullion at time of shipment and its actual cost. It represents the prospective profit on bullion on hand, in transit and on consignment, on the basis of prices current; but no profit is taken up in the accounts until actual sale, all product being carried meantime at the cost of producing.

Officers and directors of the **Greene Consolidated Copper Company are:**

WM. C. GREENE, ***President.***
MARK L. SPERRY, ***Vice-President.***
ANSON W. BURCHARD, ***Second Vice-President and Comptroller.***
EDWARD B. TUSTIN, ***Treasurer.***
GEO. S. ROBBINS, ***Secretary.***
JOHN T. MORROW, ***General Manager Reduction Division.***
JAS. H. KIRK, ***Superintendent of Mines.***

Directors:

CHARLES ADSIT,
THOMAS H. ANDERSON,
BERNARD M. BARUCH,
EMIL BEROLZHEIMER,
HENRY F. BLOUNT,
ANSON W. BURCHARD,
H. E. HUNTINGTON,
JOHN W. GATES,
W. C. GREENE,
EDWIN HAWLEY,
HENRY OLLESHEIMER,
MYRON M. PARKER,
FRANK H. RAY,
EDWARD C. RICE,
H. S. BLACK,
ALFRED ROMER,
L. C. WEIR,
J. B. SHOWALTER,
MARK L. SPERRY,
EDWARD B. TUSTIN,
J. WEIDMANN.

Executive Committee:

ANSON W. BURCHARD,
H. E. HUNTINGTON,
JOHN W. GATES,
W. C. GREENE,
EDWIN HAWLEY,
MYRON M. PARKER,
FRANK H. RAY,
MARK L. SPERRY,
EDWARD B. TUSTIN.

Office, 24 Broad Street, New York.

Mines and Works at Cananea, Sonora, **Mexico.**

The October, 1903, output of the Greene Company was approximately 4,000,000 pounds of Copper.

OSCEOLA CONSOLIDATED MINING COMPANY.

The mining territory now operated by this company includes properties which at one time belonged to three distinct corporations, viz., the original Osceola company, the Kearsarge and the Tamarack Junior. A continuance of the Calumet lode was discovered by Mr. E. J. Hulbert just prior to the organization of the original Osceola company in 1873 on the extreme northern boundary of the company's property, which adjoins that of the Calumet & Hecla. The intention was to mine from this vein, but the ground to the south was found barren, and as the rich workings on the conglomerate possessed by this company were of short extent they were soon exhausted and profitable mining from the Calumet & Hecla belt was impossible in the future.

In 1877 attention was called to the amygdaloid belt which runs to the east of the Calumet conglomerate some 800 feet, and to this belt the shaft houses were eventually moved; but here, as on the conglomerate, the richest part of the mine was for some time found to be on the extreme north of the company's property, and history repeated itself, as it again ran into the Calumet & Hecla property.

Captain John Daniel was in command of the mining operations at the Osceola in those early days, and after doing a great deal of exploring on the lower levels to the south, which compelled him to pass through a considerable expanse of poor ground, he was finally rewarded by discovering the amygdaloid to the south as rich, if not richer, than that which had been worked out at the north end, and as the mine had a large territory to the west and south the life of the Osceola was assured for many years.

The mineralized territory consists of some 760 acres, comprised in the property of the parent company, and situated south of the Calumet & Hecla; 120 acres, located north of the Calumet & Hecla, and which was known previous to the consolidation as the Tamarack Junior; and 1,120 acres, formerly known as the Kearsarge, lying north of the Wolverine mine. In addition a tract of land was purchased a few years ago known as the Iroquois property, but now designated the South Kearsarge Branch, with 100 acres. The Osceola Consolidated owns 10,900 feet of the outcrop of the Kearsarge vein, being 6,500 feet on the North Kearsarge end and 4,400 feet on the South Kearsarge end, with a chance to mine to great depths.

There are six shafts at the Osceola Branch of the mine, which open on the Osceola amygdaloid vein; three shafts on the North Kearsarge Branch, operating on the Kearsarge amygdaloid; two on the South Kearsarge Branch, and two on the Tamarack Junior Branch. The latter are vertical shafts sunk to mine from the Calumet conglomerate lode. Shafts Nos. 1 and 2 on the Osceola Branch are not now in use. They do not go down below the sixteenth and twenty-third levels, respectively, being nearer the Calumet & Hecla boundary on the north. The production comes from the south side of the mine, and as the vein can be followed for a long distance on the Osceola Branch the output from that part of the property bids fair to be of long duration. The principal shaft of the four active ones on this section of the mine is No. 6, located at the southern end, with an intervening distance of about 1,300 feet between it and No. 5.

Osceola shaft No. 6 was started in the spring of 1895, and went into commission in April, 1898. It is now down a depth of over 4,000 feet and has entered into some of the best mineralized ground at the mine. Operations were carried on through this shaft continuously during the year 1902, and with the most satisfactory results. It is splendidly equipped and has worked most smoothly. Drifts have been run north and south from the new shaft, so that the lode has been well opened up at this point, with the intention of making this shaft a strong producer and one of the most remunerative at the mine.

Shaft No. 5 had to undergo repairs in August, 1902, as signs of collapse were apparent between the fourteenth and twenty-third levels, making it necessary to retimber the portion in danger from too great pressure. The extensive shut-down at No. 5 for repairs seriously affected the product from the mine, as no rock was produced from that shaft for over five months. The work has been completed, however, and a larger output at less cost is hereafter expected. Owing to the unfavorable character of the copper market during a great part of 1902, all work in the neighborhood of shafts Nos. 3 and 4 of the Osceola Branch was suspended, as the scale of work under way at those openings did not justify its prosecution except under favorable market conditions for the product.

At the South Kearsarge Branch No. 1 shaft was sunk 117 feet in 1902 and No. 2 shaft 126 feet. Drifting north and south from both shafts from the first to the sixth level, inclusive, last year was 5,736.1 feet. A trestle 1,100 feet long connects the two shafts, and the rock from No. 2 shaft is conveyed by this means to the rock house at No. 1 shaft, where the rock from both shafts is treated by rock breakers. The management pursue the same system of lateral openings at this branch as that followed at the Osceola Branch, which is found to be cheaper and more satisfactory than the old method of driving small drifts. The compressor power has been increased at this section of the property, which will result in a consequent increase in the production, as practically double the number of machines that have heretofore been operated can be used. The surface equipment at the South Kearsarge is now about as complete as there is call for, and its operation last year was very satisfactory.

There are three shafts at the North Kearsarge Branch, and at this quarter of the mine large blocks of ground are now open. No. 1 shaft at the North Kearsarge was sunk 648.5 feet in 1902, and this opens the shaft from the surface to the twenty-fourth level. This shaft is to be equipped to the twenty-fourth level, when machines will be started, which will allow the shaft to go into regular commission soon, after which it is intended to abandon No. 2 shaft as a working shaft. No. 3 shaft was started in 1898, and is located 1,425 feet north of No. 2, and at the beginning of

1903 it was down below the twenty-fourth level. In the territory north and south of No. 3 the opening work was pushed vigorously during 1902. A new compressor is to be installed in a short time, and the two well equipped shafts at the North Kearsarge are expected to be operating to the limit of their capacity before the summer of 1903. The following improvements were added at this branch of the mine: A new engine house, warehouse, building and foundations for compressor at No. 1 shaft, building and foundation for compressor at No. 3 shaft, combined carpenter and machine shop with equipment, new office, dam for condensing water, etc. The surface equipment at this part of the property will soon be practically complete, which will enable it to handle its product at a minimum cost. With the exception of some exploration work at the Tamarack Junior there is not much doing at that branch of the mine.

The Osceola has three stamp mills, where the rock from its mines is crushed. Until near the end of 1899 six heads of stamps in the old mill treated the stamp rock. In that year the stamping facilities were increased by the addition of three new modern stamps capable of treating 500 tons each daily, contained in a new steel structure 215 x 135 feet. Another building has been erected in addition to the two above mentioned, having four new powerful stamps of the same type as those previously set up. The two new mills and the seven heads of stamps will enable the Osceola to treat its rock economically and on a large scale. The stamp mill operations throughout the past year, 1902, were conducted without a hitch. The cost of stamping per ton of rock in 1902 was 21.735 cents, against 26.575 cents in 1901, and the lessening in cost of treatment shows that the management were justified in making the important improvements introduced in the Osceola stamp mills. In the death of Captain William E. Parnall, in January, 1903, long a director in the company and for many years superintendent at the mines, the Osceola lost an able and energetic manager. The company sold all of its copper produced during the year 1902, as well as all copper on hand at the beginning of 1902. An increased production is expected during the year 1903.

Osceola Consolidated Mining Company.

Comparative Results for 1901 *and* 1902.

	1901.	1902.
Tons rock mined	958,272	969,835
Tons rock hoisted	892,172	908,264
Tons rock stamped	793,207	836,400
Pounds mineral obtained	18,807,616	18,430,012
Percentage of refined copper in mineral	72.934	72.797
Pounds refined copper per ton of rock hoisted	15.4	14.8
Pounds refined copper per ton of rock stamped	17.3	16.0
Product fine copper, pounds	13,723,487	13,416,396
Cost per pound at mine, excluding construction	10.94c.	9.91c.
Cost per pound construction	3.52c.	0.64c.
Cost per pound of smelting, freights, eastern expenses, commissions and all other charges	1.45c.	1.22c.
Total cost per pound of refined copper	15.91c.	11.77c.
Cost of mining per ton of rock, including stamping	$1.57	$1.37
Cost stamping per ton hoisted	23.627c.	20.015c.
Cost stamping per ton stamped	26.575c.	21.735c.

Assets and Liabilities for 1901 *and* 1902.

	1901.	1902.
Assets, including copper since sold	$1,425,715.73	$813,064.33
Liabilities, including advances on copper, since paid from sales of same	1,667,213.88	1,039,090.15
Balance of liabilities	$241,498.15	$226,025.82

Assets and Liabilities.

Assets.

Cash and accounts receivable at Boston and copper on hand, sold, but not paid for	$392,121.57	
Cash and accounts receivable at mines	6,279.22	
Supplies on hand at mines	211,354.36	
Wood and timber lands	43,309.18	
Mineral Range Railroad Company stock	100,000.00	
Lake Superior Smelting Company stock	60,000.00	
Total assets		$813,064.33

Liabilities.

Accounts payable at mines	$190,597.96	
Accounts payable at Boston, including advances on copper, since paid from the sale of same	848,492.19	
Total liabilities		$1,039,090.15
Balance of liabilities December 31, 1902		$226,025.82

There still remain in the Treasury 3850 shares of this Company's stock which is not included in above statement.

The production of Osceola Mining Company is estimated this year, in tons of mineral, as follows:

1903.	Tons of Mineral.
January	600
February	600
March	720
April	750
May	815
June	904
July	917
August	985
Total	6,291

The first Osceola dividend was paid on November 15, 1878, being $1 on its then 40,000 shares. In 1880 the shares were increased to 50,000, and remained unchanged until 1897, when the capital stock was increased to $2,500,000 in 100,000 shares of $25 each. The company paid $571,200 in dividends in 1900 and $576,900 in 1901, but paid no dividends in 1902. Total dividends paid number 52 and aggregate $4,247,300. The number of shares outstanding are 96,150, the remaining 3,850 shares being treasury stock, which at present market prices is more than sufficient to offset the balance of liabilities. The original charter of the Osceola Consolidated Mining Company expired August, 1903, and the incorporation was renewed for another period of thirty years from above mentioned date. The Osceola has lately been increasing its rock shipments and mineral output. Mineral product for July, 1903, was returned at 917 tons. Six stamps have been kept going, and it is expected that the seventh stamp will be in operation in September, or sooner. Production for 1903 is expected to be larger than for 1902, and it is believed that the company will show good net profits on 1903 operations. With a good copper market dividends may be resumed before very long.

In September, 1903, the Osceola output was stated at 1,620,000 pounds of copper, the best month's production in its history. The daily average rock shipments to the Osceola stamp mill in October, 1903, were, early in the month, 3,400 tons.

The officers of the Osceola Consolidated Mining Company are as follows:

A. S. BIGELOW, *President.*
W. J. LADD, *Secretary and Treasurer.*

Directors:

A. S. BIGELOW, W. J. LADD,
EDWARD S. GREW, J. HENRY BROOKS,
N. W. HAIRE, E. R. HALL,
WILLIAM BATH.

Office, 199 Washington Street, Boston.

The annual meeting of stockholders is held on the second Thursday in March in each year.

PRODUCTION OF GOLD, SILVER, COPPER AND LEAD IN THE STATE OF MONTANA, FROM THE YEAR 1862 TO 1902, INCLUSIVE, AS REPRESENTED BY THE VALUE OF SAME, PER OFFICIAL RETURNS.

Years.	Gold.	*Silver.	Copper.	Lead.	Totals.	Yearly increase. Per cent.
1862-81	$200,000,000	$11,000,000	———	———	$211,000,000	—
1882...	2,550,000	4,370,000	$1,539,860	———	8,459,860	—
1883...	1,800,000	6,000,000	3.452,960	$326,424	11,479,384	37½
1884...	2,170,000	7,000,000	5,386,500	246,326	14,802,826	31
1885...	3.400.000	11,500,000	6,779.800	274,350	21,954,150	50
1886...	4,422.000	13,849.000	5,761,200	494,132	24,526,332	12
1887...	5,978,536	17,817,548	8.853,750	607,662	33,257,496	35½
1888...	4.200.253	15.790.736	15,103,946	569,160	35,664,095	7½
1889...	3,500.000	19.393.939	13,334.970	456,975	36,685,884	3
1890...	3.300,000	20.363.636	16.656,437	675,392	40,995,465	11½
1891...	2.890,000	20,139,384	14,377.336	1,229,027	38,635,757	†5½
1892...	2,891,386	22,432,323	19,105,464	99,035	45,419,208	18
1893...	3,576,000	21.858,780	16,630.958	964,089	43,029,827	†5
1894...	3,651,410	16,575.458	17,233,718	730,551	38,191,137	†11
1895...	4.327,040	22.886,992	21.114.869	754,360	49,083,261	28½
1896...	4.380.671	20,324.877	25,356.541	670,010	50,732,099	3½
1897...	4,496.431	21.730.710	26,798.915	928,619	53,954,675	6
1898...	5,247,913	19,159.482	26.102.616	809,056	51,319.067	5
1899...	4,819,157	21.786,835	40,941,906	909,410	68,457,308	33
1900...	4.736,225	18,482,211	39,827,135	701,156	63,746,727	†7
1901...	4.802,717	18.334.443	36.751.837	498,622	60,387,619	†5
1902...	4.400.095	17.622.285	24,606,038	332,747	46,961,165	—
Totals	$281,539,834	$368,418,649	$385,716.756	$13,068,103	$1,048,743,342	—

* Coinage value. † Decrease.

THE NEW
PUBLIC LIBRARY
ASTOR, LENOX AND
TILDEN FOUNDATIONS

J. R. STANTON.

WOLVERINE COPPER MINING COMPANY.

The Wolverine is one of the best copper mines for its size either at Lake Superior or any other copper district. During the past twelve years of active operations it has increased its annual output of refined copper from 500,074 pounds to 8,260,386 pounds, and now, with its newly completed first class modern stamp mill running, the company may be expected to increase its output still further and be able to show an annual production of not much below 9,000,000 to 10,000,000 pounds of refined copper.

This property is exceedingly well managed, and has been remarkably successful in every respect. During the comparatively brief period of its present corporate existence it has produced to June 30, 1903, 39,404,537 pounds of refined copper, and paid eleven dividends, aggregating $1,320,000. For the last three years the quality of its rock treated has been showing steady improvement until it reached 29.60 pounds per ton, or 1.48 per cent, during its last business year. The quantity of copper obtained from a ton of rock treated during the previous year was 26.59 pounds, or 1.33 per cent, and for the year ending June 30, 1901, it was 25.81 pounds per ton, or 1.29 per cent. In the year ending June 30, 1900, it was 25.77 pounds per ton, or 1.288 per cent.

The quantity of rock hoisted from the mine during the year ending June 30, 1902, was less than for any of the past four years, but owing to its greater richness the yield of mineral and refined copper was the largest in the Wolverine's history. The following table contains production in rock and copper for the years named:

Year. Fiscal.	Rock hoisted. Tons.	Rock stamped. Tons.	Product in mineral. Pounds.	Product in refined copper. Pounds.	Yield of copper in rock treated. Pounds per ton.	Per cent.
1902-1903.....	299,922	279.011	11.330,370	8.260.386	29.60	1.48
1901-1902.....	213,650	187.482	6,232,800	4.984.367	26.59	1.33
1900-1901.....	223.971	190,104	5.853.400	4,907,646	25.81	1.29
1899-1900.....	215,951	184.594	5.469,700	4,756.646	25.77	1.288
1898-1899.....	217.243	184,799	5,360.740	4.700.373	25.43	1.271
1897-1898.....	167,568	130,089	3.949.045	3,470.927	26.68	1.334
1896-1897.....	108,320	82,270	2.557.445	2,237,698	27.02	1.36
1895-1896.....	106,190	85.155	2,325,875	2,011,638	23.62	1.181
1894-1895.....	118,085	90,195	1,992,940	1.744,070	19.33	.966
1893-1894.....	108.220	76,440	1,852.235	1,611,857	21.08	1.05

There are four shafts at the Wolverine mine, but only three are used. No. 1 shaft is near the northern boundary of the property. No. 2 is located 400 feet south of No. 1. This shaft was raised 69.5 feet during the last fiscal year, from the fifteenth to the fourteenth level. The management intend to extend it to the eighteenth level by raises. No. 3 shaft is 700 feet south of No. 2 and is down a little below the twenty-second level. No. 4 shaft has been sunk to a point below the eighteenth level, and is 1,385 feet south of No. 3. Levels from No. 4 have been opened at the eighteenth, south 346.5 feet, seventeenth, south 605 feet, sixteenth, south 798.3 feet, fifteenth, south 426.9 feet, eleventh, south 48 feet. With a few exceptions all these openings are classed as first rate copper bearing ground, carrying good stamp rock and considerable barrel copper.

The company has been giving much attention during the past few years to the development of that end of the mine where No. 4 shaft is located, with excellent results. The property comprises 280 acres of land, and is now sufficiently opened up to maintain a regular annual production exceeding anything in the past. It is a splendid mine, well equipped, and furnished with a complete up-to-date outfit which will enable the management to produce at a low cost. The openings for the year ending June 30, 1902, were 532.4 feet of sinking and raising shafts; 7,771.8 feet of levels and cross cuts, and 11,350.5 fathoms stoped. Amount of rock hoisted during the above mentioned year was 213,650 tons, of which 26,168 tons was discarded as poor, equal to about 12¼ per cent. The reserves of stoping ground are quite extensive and of very good quality, and the mine can readily furnish the copper rock for materially increasing production for years to come without additional openings.

The erection of a new stamp mill was started in the spring of 1901 on the shore of Traverse Bay. The mill contains two heads of stamps of the most modern type, having an estimated capacity for stamping from 900 to 1,000 tons daily. The rock stamped with the old facilities during the year ending June 30, 1902, was on the average a little more than 600 tons per working day. An increase of nearly 50 per cent. may therefore be expected in output, and it is believed that the cost of production will be reduced to less than 7 cents per pound. On this basis of production and cost the Wolverine can earn much more than its recent dividends of $4 a year. With copper at 15 cents Wolverine earnings should equal fully $12 a share annually, or equivalent to $1 per share monthly. On a 12 cent copper market it is figured the company would be able to earn $8.25 per share yearly, while with copper 14 cents the annual profits would amount to about $11.25 per share annually. The above figures are based on a production of 9,000,000 pounds of copper a year. If the output should reach 10,000,000 pounds the earnings would show a material increase. The last dividend, paid April 1, 1903, was $2.50 per share, and it is probable if the copper metal conditions are favorable the next semi-annual dividend, due October 1, 1903, will be further increased.

The organization of the Wolverine Copper Mining Company dates from August 2, 1890. The capital of the company is $1,500,000, divided into 60,000 shares of $25 each.

The product of the mine for the business year ending June 30, 1902, was 6,232,800 pounds of mineral, which yielded 79.97 per cent., or 4,984,367 pounds of refined copper, which was sold at an average of 13 21-100 cents per pound.

Summary of year's business from June 30, 1901, to June 30, 1902:

Production.		
4,984,367 pounds copper at 13 21-100 cents per pound		$658,602.42
Interest received		6,730.86
		$665,333.28
Costs.		
Working expenses at mine	$364,093.29	
Smelting, freight and all expenses	60,236.47	
		424,329.76
Leaving a mining profit of		$241,003.52
Expended for construction		$264,677.90
Showing an excess of expenditure for the year of		$23,674.38
The surplus for the previous year was		540,141.88
		$516,467.50
Deduct.		
Dividend October 1, 1901	$120,000	
Dividend April 1, 1902	120,000	
		240,000.00
Leaving a surplus June 30, 1902, of		$276,467.50

Summary of Costs.

Wolverine Copper Mining Company.

	Fiscal year, 1901-1902.	Fiscal year, 1900-1901.	Fiscal year, 1899-1900.
Cost per ton of rock hoisted..	$1.70	$1.55	$1.52
Cost per ton of rock stamped.	1.94	1.83	1.77
Cost per pound of refined copper at mine..............	7.304c.	7.10c.	6.885c.
Cost of smelting, freight, etc.	1.208c.	1.165c.	1.255c.
Total cost of refined copper, per pound	8.512c.	8.265c.	8.14c.
Total cost per pound of refined copper, including construction	13.82c.	8.84c.	9.56c.

Assets and Liabilities.

June 30, 1902.

Assets.

Cash in bank..		$27,221.36
Deposit in Trust Company.............................		182,387.16
Copper bills..		84,377.86
		$293,986.38

At Mine.

Cash	$1,770.46	
Fuel	22,508.20	
Supplies	25,570.72	
		49,849.38
		$343,835.76

Liabilities.

Indebtedness at mine.......................	$62,246.74	
Accounts payable...........................	5,121.52	
		67,368.26
Balance of assets June 30, 1902....................		$276,467.50

Production of Refined Copper,

Wolverine Copper Mining Company.

	1902. Pounds.	1901. Pounds.
January	414,534	421,911
February	393,043	389,729
March	415,759	411,616
April	404,619	412,081
May	405,536	403,954
June	489,707	445,666
July	427,466	414,190
August	505,108	414,406
September	710,539	400,787
October	785,690	411,072
November	762,723	411,695
December	758,457	409,019
Total 12 months..	6,473,181	4,946,126

The product of the Wolverine Copper Mining Company for the year ending June 30, 1903, was 11,330,370 pounds of mineral, which yielded 72.90 per cent., or 8,260,386 pounds of refined copper.

The following is the official summary of the business for the fiscal year ending June 30, 1903:

Production.		
8 260.386 pounds copper at 12 48-100 cents		$1,030,755.92
Interest received		2.504.07
		$1,033,259.99
Costs.		
Working expenses at mine	$451,739.95	
Smelting, freight, marketing, etc	97,182.84	
		548,922.79
Leaving a mining profit of		$484.337.20
Expended for construction		38,014.18
Leaving a net profit of		$446.323.02
Surplus from previous year was		276,467.50
		$722,790.52
Deduct.		
Dividend October 1, 1902	$120,000.00	
Dividend April 1, 1903	150,000.00	
		270.000.00
Leaving a surplus June 30, 1903, of		$452,790.52

The new Wolverine stamp mill went into commission in August, 1902, and it has admirably fulfilled expectations. The new plant has effected a reduction in cost of production and raised the capacity of output. Total cost per pound of refined copper during the last fiscal year was 6.645 cents, against 8.512 cents for the previous year. The total cost per pound of refined copper, including construction, for the year ending June 30, 1903, was 7.105 cents, compared with 13.82 cents for the year ending June

30, 1902, being a reduction in the latter item of 6.715 cents per pound. Cost per ton of refined copper at mine was reduced from 7.304 cents for the year ending June 30, 1902, to 5.469 cents last fiscal year. Cost per ton of rock hoisted was reduced from $1.70 to $1.51, and cost per ton of rock stamped from $1.94 to $1.62. While costs of operation and treatment have been materially reduced, the yield of rock treated increased from 26.59 pounds per ton in 1901-1902 to 29.60 pounds of copper per ton in 1902-1903. The new mill is fully capable of treating 1,000 tons of rock a day, and can exceed this if necessary. All the machinery has given entire satisfaction, and the Wolverine is now equipped to show splendid results. No. 3 shaft was sunk last fiscal year 222.5 feet, and is now a little below the 24th level. No. 4 shaft was sunk 208.8 feet, to a point below the 20th level. No. 2 shaft was raised 197 feet, from the 17th to 15th levels. The equipment of both mine and mill may now be considered complete, and the company are now in position to produce more copper at a lower cost and pay larger dividends than ever before.

ASSETS AND LIABILITIES OF WOLVERINE COPPER MINING COMPANY.

JUNE 30, 1903.

Assets.		
Cash in bank		$34,491.98
Deposit in Trust Company		176,848.61
Copper bills		226,322.65
At Mine.		$437,663.24
Cash	$1,192.57	
Fuel	32,202.50	
Supplies	28,241.78	
Accounts receivable	16,864.19	
		78,501.04
		$516,164.28

Liabilities.

Indebtedness at mine	$53,536.03	
Accounts payable	9,837.73	
		63,373.76
Balance of assets June 30, 1903		$452,790.52

Officers of the Wolverine Copper Mining Company are:

JOHN STANTON, *President.*
J. R. STANTON, *Secretary and Treasurer.*

Directors:

JOHN STANTON, JOSEPH E. GAY,
J. R. STANTON, J. W. HARDLEY,
SAMUEL L. SMITH.

Office, 15 William Street, New York.

Transfer Agent, The American Loan and Trust Company, 53 State Street, Boston.

The annual meeting of stockholders is held on the first Monday in August in each year.

The Wolverine declared a semi-annual dividend of $3 per share, payable October 1, 1903. Total dividends, $1,320,000.

Production of Wolverine Copper Mining Company for the first half of 1903 was as follows:

1903.	Refined Copper.
January	735,427 lbs.
February	678,325 "
March	697,732 "
April	694,258 "
May	714,517 "
June	790,144 "
Total	4,310,403 lbs.

The Wolverine output in refined copper for July was 783,993 pounds, and for August 800,915 pounds, making the total production for the first eight months of 1903 amount to 5,895,311 pounds. The September, 1903, production was 763,755 pounds of refined copper. Total

Wolverine production for the first nine months of 1903 was 6,659,066 pounds of refined copper.

The Wolverine at latest accounts is in exceedingly good condition, both physically and financially. Everything in and about the mine is most promising. The company is producing a rich ore and making splendid profits. Costs have been reduced to a low level since the new stamp mill went into operation, and it would not be surprising—if copper does not sell for less than 13 cents—to see Wolverine paying dividends eventually of $10 a share per annum. The company has a large surplus, and its present monthly net profits warrant expectations of better things than its previous best records show. Mine, plant, management and finances give assurances of good things in store for stockholders.

The Wolverine production for October, 1903, was 787,745 pounds of copper. Total output for the first ten months of 1903 was 7,446,801 pounds of refined copper.

UNITED STATES EXPORTS OF COPPER.
BY MONTHS.

Exports of copper from the United States, as per the official returns made by the Copper Producers' Association, were as follows, in tons of 2,240 pounds fine:

Month.	1892.	Month.	1892.
*July	3,450	November	3,897
August	1,545	December	4,486
September	1,458		
October	3,144	Total six months	17,980

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* Statistics began to be published in July, 1892.

Month.	1893.	1894.	1895.
January	3,171	7,717	7,144
February	1,815	5,590	3,450
March	2,334	7,137	3,914
April	3.450	6.209	5,677
May	4,482	6,140	5,430
June	5.109	6,976	8,600
July	7,181	7,226	6,035
August	9,127	6,408	4,493
September	16,131	7,093	4,106
October	11,478	5,057	3,773
November	7.821	4,785	4,874
December	8,293	6,793	7,226
Total twelve months	80,392	77.131	64,722

UNITED STATES EXPORTS OF COPPER.—CONTINUED.

In tons of 2,240 pounds fine.

Month.	1896.	1897.	1898.
January	8,168	9,651	11,030
February	8,296	8,856	9,611
March	10,892	11,232	13,714
April	10,684	10,279	11,577
May	10,481	12,175	12,796
June	9,707	12,677	9,556
July	10,885	13,728	15,354
August	9,119	10,971	11,424
September	10,898	10,980	11,280
October	11,371	8,785	10,810
November	12,034	9,294	14,741
December	12,980	10,582	13,222
Total twelve months	125,605	129,210	145,115

Month.	1899.	1900.	1901.	1902.
January	9,204	14,035	10,003	15,021
February	8,391	12,749	8,453	16,108
March	14,414	20,148	6.818	20,097
April	7,423	12,764	4,849	16,424
May	7,026	13,997	10,062	16,283
June	10,002	16,586	9,842	14,027
July	7,160	11,636	6,824	11,733
August	10,920	13,861	6,840	12,429
September	7,753	10,425	6,419	13,183
October	11,360	12,682	8,016	12,515
November	10,809	9,508	6,069	10,915
December	15,550	11,223	10,171	10,032
Total 12 months	119,812	159,614	94,366	168,767

COPPER RANGE CONSOLIDATED COMPANY.

The Copper Range Consolidated Company was organized under the laws of the State of New Jersey December 2, 1901, with a capital stock of $28,500,000, divided into 285,000 shares of $100 each. The following official statement states concisely the objects for which the company was organized, viz.:

"The Copper Range Consolidated Company was formed to consolidate the Baltic Mining Company and the Copper Range Company of Michigan, and issued its shares in exchange for shares of those two companies on the basis of one share of Copper Range Consolidated Company for each share of Baltic, and one and one-half shares of Copper Range Consolidated Company for each share of Copper Range Company. At the same time, 35,000 shares of Copper Range Consolidated Company were offered to shareholders in the Baltic and Copper Range companies at $40 per share, payable in easy instalments. The $1,400,000 which was received from the 35,000 shares so offered was needed for the following purposes:

To complete the equipment of the Baltic Mine and Mill, so as to be able to produce and mill 2,000 tons of rock per day	$300,000.00
To build the extension of the Copper Range Railroad Company to Calumet, and other new mileage	700,000.00
To provide one-half the amount necessary to complete the equipment of the Champion Mine and Mill, so as to be able to produce and mill 2,000 tons of rock per day	400,000.00
	$1,400,000.00

WM. A. PAINE.

1,379 shares of Copper Range Consolidatd Company, held by the Treasurer for exchange for the outstanding shares of the Baltic Mining Company and the Copper Range Company	137,900.00
Commission paid underwriters on subscription of $1,400,000	35,000.00
Organization expenses, legal charges and services of trustee in exchange of stock	10,300.07
Taxes, including incorporation and United States Internal Revenue tax	29,097.64
Printing and advertising	1,106.00
Other expenses, including transfer and registration of stock	12,161.21
Loans to the Baltic Mining Company	305,500.00
Loans to the Copper Range Company	951,173.92
Loans to Stanton Township	12,800.00
Cash on hand	61,780.63
	$28,518,928.47

Credits.

Capital stock	$28,500,000.00
Interest	18,928.47
	$28,518,928.47

At a meeting of the stockholders of the Copper Range Consolidated Company, held at Jersey City on September 8, 1903, it was voted to increase the capital stock from $28,500,000 to $38,500,000 by the issue of 100,000 additional shares, of the par value of $100 each. The increased capitalization was for the purpose of acquiring by purchase the entire outstanding capital stock of the Trimountain Mining Company, or less, and to issue in payment for each share of Trimountain stock so purchased and acquired one share of the capital stock of the Copper Range Consolidated Company.

Three mines now enter into the Copper Range Consolidated Company, viz., Champion, Baltic and Trimountain, and the whole now forms a territory of some 3,160 acres, which is a larger area than that of the Calumet & Hecla. They are all new mines, with great possibilities before them. Dividends by the Copper Range are looked forward to at no very distant date.

The officers of the Copper Range Consolidated Company are as follows:

WILLIAM A. PAINE, *President.*
* EDWARD B. MALTBY, *Vice-President.*
FREDERIC STANWOOD, *Secretary and Treasurer.*

Directors:

WILLIAM A. PAINE,	JOHN STANTON,
SAMUEL L. SMITH,	J. HENRY BROOKS,
CHARLES H. PAINE,	KENNETH K. McLAREN,
* EDWARD B. MALTBY,	CAMERON CURRIE,

FREDERIC STANWOOD.

Transfer Agent, The American Loan and Trust Company, Exchange Building, Boston.

Registrar, Old Colony Trust Company, Ames Building, Boston.

Office, 26-27 Brazer Building, Boston, Mass.

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* Deceased.

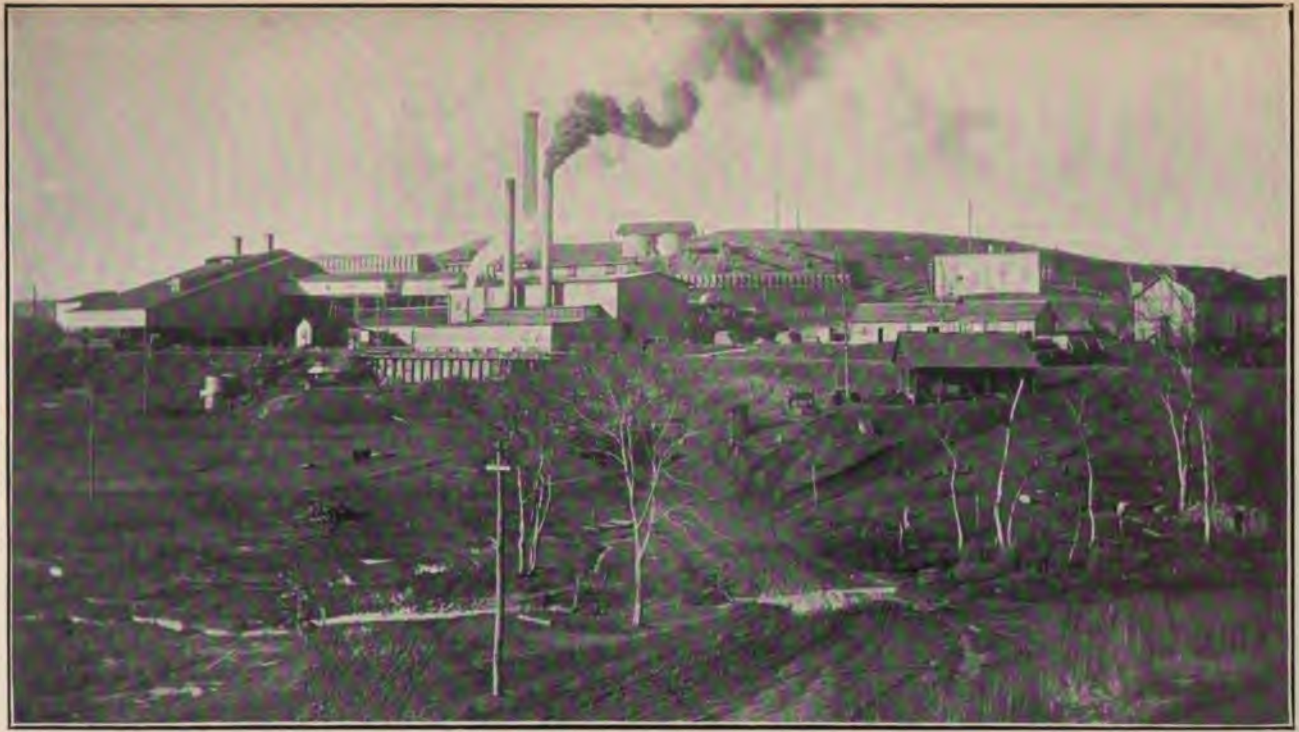
EUROPEAN COPPER STATISTICS.

In tons of 2,240 pounds.

Stocks.	January 1, 1903.	July 1, 1902.	January 1, 1902.
Liverpool and Swansea, Chile Bars, etc.	2,197	3,855	4,972
Liverpool and Swansea, other than and English	6,070	11,849	8,668
London, including landing	1,966	642	747
France	982	873	1,314
Total stocks	11,215	17,219	15,701
Afloat:			
Afloat from Chile	3,400	3,675	3,050
Afloat from Australia	1,925	2,325	3,300
Total foreign visible supply	16,540	23,219	22,051

Total Foreign Visible Supply of Copper on the Following Dates, in Tons of 2,240 Pounds.

Date.	Tons.	Date.	Tons.
January 1, 1901	22,860	January 1, 1893	55,745
January 1, 1900	22,817	January 1, 1892	56,044
January 1, 1899	27,896	January 1, 1891	65,366
January 1, 1898	31.955	January 1, 1890	98,847
January 1, 1897	34,927	January 1, 1889	104,091
January 1, 1896	45,817	January 1, 1888	42,301
January 1, 1895	54,664	January 1, 1887	63,290
January 1, 1894	47,295	January 1, 1886	58,170



SMELTER OF THE TENNESSEE COPPER COMPANY.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS

TENNESSEE COPPER COMPANY.

This company, which began operations in May, 1899, owns 13,180 acres of land in the old Ducktown District in the southeast corner of Tennessee. Starting with no work on the mines except a series of diamond drill holes put down in 1897 and the records of the black copper operations of 30 years previous, three mines, the Polk County, Burra Burra and London, have been developed each to a depth of over 300 feet, showing large bodies of massive sulphide ore varying in width from 30 to 75 feet and in length from 500 to 1,000 feet. The mines have been equipped with modern hoisting and compressing machinery made by the Nordberg Manufacturing Company, and large shaft crusher houses built. Seven and one-half miles of standard gauge railway have been built and equipped, connecting the mines with the roast yards, the smelter and the Atlanta, Knoxville & Northern Railway. The railway equipment consists of four 50-ton locomotives and sixty-four 30-ton cars.

Roast yards covering thirty acres have been graded in terraces and provided with sidetracks of over three miles in length. These roast yards have a capacity of 135,000 tons of ore, and nearly all the ore heaps are protected from the weather by sheds. A steel smelter has been constructed containing two water-jacketed blast furnaces 56 x 18 feet at the tuyeres and 18 feet high from tuyeres to charging floor; two converter stands and seven shells for Bessemerizing the matte produced in the blast furnaces: one 25-ton refining furnace for converting the Bessemer copper directly into ingots: three electric charging locomotives and twenty-one 2-ton charging cars: two electric slag locomotives and eight 5-ton slag cars: one 40-ton electric crane spanning the converter building: a clay mill for preparing the linings for the converters: and bins for ore, flux and coke with a capacity of over 5,000 tons.

The power house for the smelter is of brick and steel and contains four 250-horsepower water tube boilers: two blast furnace blowing engines: one converter blowing engine and a full equipment in duplicate of electric generators, feed and circulating pumps, condenser, feed water heater, etc. The blast furnace blowing engines are of the horizontal piston type, especially designed for the work by the Nordberg Manufacturing Company.

In addition to these various shops have been erected, some 50 or 60 houses for employees and five houses for officers.

The smelter was started in August, 1901, but only one furnace was in operation until June, 1902, by which time the roast yards were entirely stocked with ore. Since that date both furnaces have been in continuous operation. They have proven to be of great capacity, on December 16, 1902, the record day, 1,333 tons of charge having been melted in them 686 tons in one furnace and 647 in the other. This is by far the largest tonnage which has ever been put through a copper furnace.

The product of copper for the five months of operation in 1901 was 1,700,000 lbs.; for 1902 the production was

8,103,534 lbs., and it is estimated that for 1903 the product will be in excess of 10,000,000 lbs.

It is estimated that over 2,000,000 tons of ore are in sight in the three mines, figuring only above the third level, and during 1903 the three principal mine shafts will be sunk for at least two more levels.

The whole scheme of mine development and equipment and of railway, roast yard and smelter equipment has been with the view of cutting down the labor cost and using mechanical methods as much as possible. The wisdom of this has been shown in the exceptionally low cost of mining and smelting attained.

The Tennessee Copper Company was organized under the laws of the State of New Jersey April 26, 1899, with a capital of $5,000,000, divided into 200,000 shares of the par value of $25 per share. Only 175,000 of these shares have been issued.

In addition there has been an issue of $500,000 of 5 per cent. bonds.

The net profit for the calendar year 1902, after allowing for depreciation, was $231,109.14. The balance of profit for the short campaign of 1901 was $51,725.57, or a total of $286,834.71, based on a twelve months' campaign of two furnaces.

During the year 1902 the total quantity of ore mined and shipped was 250,769 tons, and there was smelted the equivalent of 221,194 tons. The product for the year 1902 was 8,103,534 pounds of fine copper.

The following shows the several items of operating expenses per ton of green ore:

	Per ton.
Mining and development	$.8411
Crushing and sorting	.0827
Roasting	.3399
Railway	.1547
Engineering and laboratory	.0268
General	.0866
Blast furnace	1.0469
Converting	.2172
Refining	.1007
Total	$2.8966

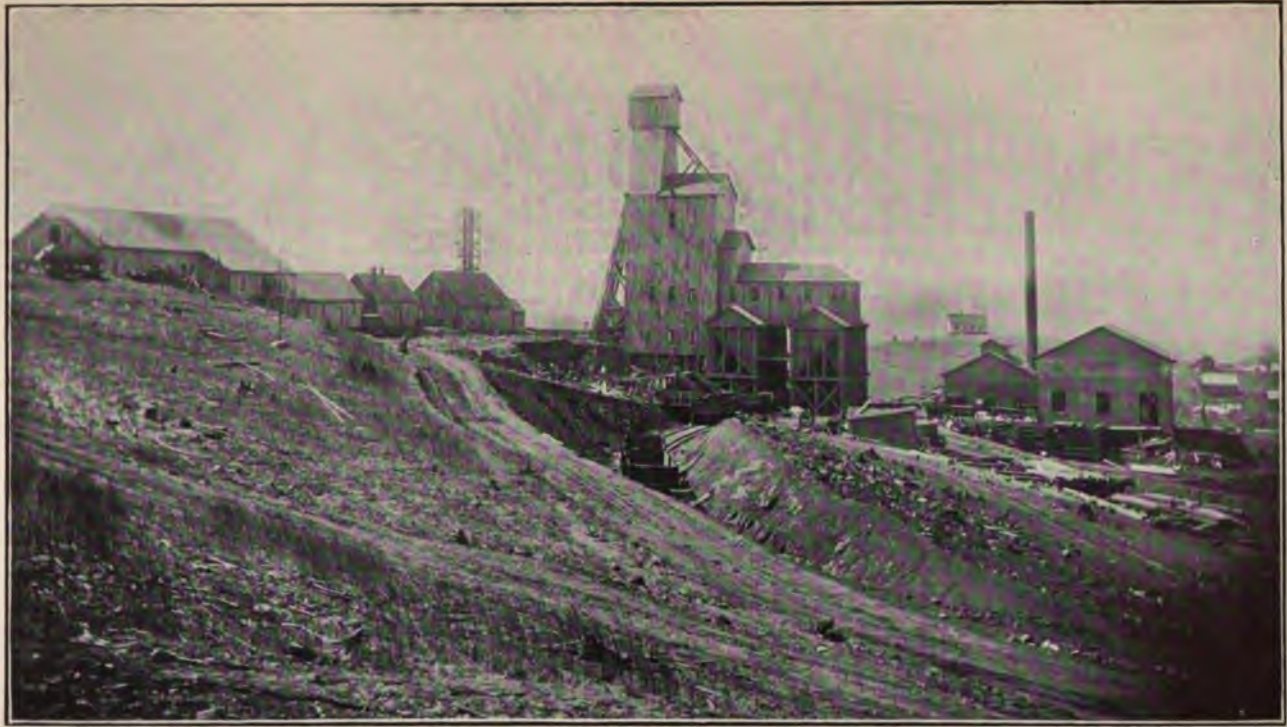
The operating cost per ton down to the point where the material was put in the blast furnace amounted to $1.5318 per ton of sulphide ore and $1.1919 per ton of silicious ore, but the company considered it advisable to charge these out at $1.58 and $1.36, respectively.

On this basis the operating costs in cents per pound of copper have been as follows:

Treatment.	Pig copper. Cents.	Ingot copper. Cents.
Mining, crushing, etc	3.44	3.44
Roasting	.94	.94
Blast furnace	2.91	2.91
Converting	.60	.60
Refining	——	.28
Cost in Tennessee	7.89	8.17
Freight, commissions, eastern expenses, etc	1.07	1.04
Total	8.96	9.21

The company believes that by gradually extending the facilities of their roasting and smelting plant they will be enabled eventually to produce from 18,000,000 to 20,000,000 pounds of copper per annum. On an output of that dimension it is estimated that the cost per pound of fine copper would be reduced at least half a cent per pound.

The present depth of shaft at the Polk County mine is



VIEW OF BURRA BURRA MINE SHAFT, CRUSHER HOUSE AND POWER PLANT,
TENNESSEE COPPER COMPANY.

300 feet, with ore bodies varying from 20 to 90 feet. The shaft at the Burra Burra mine is sunk 400 feet, and further sinking is in progress, the ore body at this part of the property varying from 30 to 85 feet. Drifting shows it to be 1,030 feet in length on the third level. The shaft at the London mine is down 400 feet, and being driven deeper. The ore vein here runs from 25 to 75 feet in width, and on the first level has been proven for 500 feet. There was 740 feet of diamond drilling done in 1902.

Balance Sheet.

Tennessee Copper Company.

December 31, 1902.

Assets.

Mining property and other real estate, original cost	$3,407,400.00	
Expended prior to July 1, 1901, since which time all development has been charged to operating expenses:		
On mines	204,567.89	
		$3,611,967.89
Treasury stock		625,000.00
Bond issue discount account		71,250.00
Mining equipment		120,221.56
Drills, machinery, etc		32,918.15
Roast yard construction		83,543.14
Railway construction and equipment		266,983.82
Smelter and refining furnace construction		326,692.78
Dwellings and buildings		58,200.95
Sundry stocks at mines, accounts receivable, etc		384,113.45
Copper production inventory		263,999.32
Cash		18,265.23
		$5,863,156.29

Liabilities.

Capital stock	$5,000,000.00
Bond issue reserve account	12,500.00
5 per cent mortgage bonds	500,000.00
Depreciation account	32,645.48
Interest on bonds (paid January 2, 1903)	12,500.00
Sundry creditors	18,676.10
Profit and loss	286,834.71
	$5,863,156.29

Officers of the Tennessee Copper Company are as follows:

J. PARKE CHANNING, ***President.***
FREDERICK LEWISOHN, ***Vice-President.***
J. H. SUSMANN, ***Treasurer.***
E. C. WESTERVELT, ***Secretary.***

Directors:

H. H. ROGERS,
A. C. BURRAGE,
FREDERICK LEWISOHN,
WALTER LEWISOHN,
J. H. SUSMANN,
E. C. WESTERVELT,
EDGAR BUFFUM,
J. PARKE CHANNING,
JAMES PHILLIPS, JR.

RANDOLPH ADAMS, ***General Manager,*** **Copperhill, Tenn.**

Office, 11 Broadway, New York.

Transfer Agents, The National City Bank of New York, 52 Wall Street, New York; Old Colony Trust Company, Ames Building, Boston.

Registrars, Colonial Trust Company, New York; State Street Trust Company, Boston.

The production so far this year is as follows:

1903.	Pounds.
January	922,779
February	1,149,022
March	892,180
April	1,130,821
May	1,048,901
June	1,034,988
Total, six months	6,178,700

The Tennessee Copper Company declared its first dividend July 1, 1903, of $1.25 per share, payable July 30, 1903. This will call for the disbursement of $218,750.

The returns for July, August and September, 1903, show an aggregate copper production for those months of 2,262,000 pounds. Total production by the Tennessee Copper Company for the first nine months of 1903 returned at 8,440,700 pounds. The company has been enlarging its furnace capacity, and during the changes in progress recently production was temporarily curtailed. It is expected that eventually both capacity and output will be increased materially, and costs lowered.

J. PARKE CHANNING.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

COPPER MARKET REVIEW FOR THE YEAR 1901.

The market for copper was maintained at a high level continuously throughout the past year, until near its close. During the month of December three radical cuts were made in the price of copper, and the domestic market was completely paralyzed in consequence. January opened with a quiet tone to the market on the basis of 17 cents for Lake copper. As the month progressed activity increased, and a large business was done between 16¾@17 for Lake, and 16⅜@16⅝ for Electrolytic. Greater interest was developed in February, and sales were in large volume, with Lake prices ruling from 16.85 to 17 cents. The tone was strong and business included deliveries as far ahead as July. March came in firm at 17 cents for Lake, and although not so active as in February, was remarkably free from fluctuations. Demand in April was up to a good level, and the Lake basis of 17 was well maintained. A steady tone marked the month of May, with Lake at 17, although export sales were reported at 16½ by a leading Lake company. June was a rather quiet month, but the market preserved its steady tone without deviating from 17 cents. There was a fair business noted. Irregular features made their appearance in July. The month opened with Lake quoting 17, but with anxious sellers reported later at 16½ the market lost snap. August witnessed a continuance of the irregular conditions noted in July. Prices ranged from 16½@17 for Lake, with free selling by a prominent Lake company at the lower figure. The market was treated to startling reports in September regarding the existence of large surplus stocks of copper in this country, and business was limited in volume. The Lake basis ruled between 16½@17 cents. October developed no decline in prices, but if anything the endeavor to hold the market at 17 cents was more pronounced. Buying, however, was from hand to mouth, and pessimistic rumors deterred consumers from stocking up. During November Lake continued steady at 16¾@17, notwithstanding disturbing rumors regarding the probable lowering of market values. Early in December the market for Lake was quoting 16½@17, and large sales were reported at market prices, but understood to include rebates or guarantees. As the month wore on the market grew very unsettled over expected reductions in price. On the 13th ulto. the United Metals Selling Company lowered their prices to 15⅜@15⅝ for Lake, 15@15¼ for Electrolytic, and 15 for casting. Prices were again reduced on the 18th ulto. to 14 for Lake, 13⅞ for Electrolytic, and 13 for casting. On the 19th ulto. a further reduction was made to 13 for Lake, 12⅞ for Electrolytic, and 12½ for casting. Notwithstanding these drastic cuts in prices the market remained in a condition bordering on stagnation, and the year closed dull, with expectations of a further decline in copper values.

COPPER STATISTICS FOR THE YEAR 1901.

Price of Lake Copper.

1901. Month.	Highest. Cents per lb.	Lowest. Cents per lb.
January	16⅞	16¾
February	17	16.85
March	17	17
April	17	17
May	17	*17
June	17	17
July	17	16½
August	17	16½
September	17	16½
October	17	16¾
November	17	16½
December	17	¶13
Year	17	13

Price of Cash Standard Copper in London.

1901. Month.	Highest. £ per ton.	Lowest. £ per ton.	Sales reported. Tons.
January	72 17 6	70 16 3	8,075
February	71 15 0	70 8 9	8,350
March	70 13 9	67 10 0	11,150
April	70 17 6	68 10 0	9,200
May	70 15 0	69 1 3	10,150
June	69 7 6	67 10 0	6,850
July	68 10 0	66 15 0	8,450
August	67 7 6	65 5 0	8,875
September	67 12 6	60 10 0	12,700
October	65 5 0	62 15 0	11,600
November	66 17 6	57 10 0	14,950
December	61 12 6	47 0 0	22,200
Year	72 17 6	47 0 0	132,550

European Copper Supplies and Deliveries for Year 1901.

1901. Month.	Total supplies. Tons.	Total deliveries. Tons.
January	17,828	17,784
February	19,907	19,816
March	16,536	17,300
April	16,700	17,396
May	22,609	22,913
June	21,415	21,184
July	21,943	22,010
August	19,296	20,870
September	16,043	17,099
October	17,852	21,652
November	17,623	18,018
December	20,200	18,700
Year	227,952	234,742

Total Visible Supply of Copper in England and France and Afloat Thereto from Chili and Australia.

1901. Date.	Tons of 2,240 lbs.	Price of cash standard copper. £ per ton.
January 1	28,860	72 17 6
February 1	28,904	71 0 0
March 1	28,995	70 13 9
April 1	28,231	69 0 0
May 1	27,535	69 7 6
June 1	27,231	69 3 9
July 1	27,462	68 0 0
August 1	27,395	67 7 6
September 1	25,821	66 13 9
October 1	24,765	63 10 0
November	20,965	65 5 0
December 1	20,570	60 15 0
Jan. 1. 1902	21,940	49 0 0

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* Sales for export reported at 16½. ¶ Reported to have sold lower.

ATLANTIC MINING COMPANY.

The Atlantic mine is equipped with a fine modern surface plant and appurtenances for treating the ore found on its property, and the management is thoroughly alive to the importance of securing the best results from the operations in all departments. The yield of copper in Atlantic rock last year was the lowest on record, being 11.095 pounds per ton, or .5547 per cent. In 1901 it was 11.4 pounds per ton of rock treated, or .57 per cent. With such ore deposits to mine from, a most economical administration of affairs is necessary to success, and yet for more than 30 years the Atlantic Mining Company has prosecuted efficiently and successfully the business of copper mining. During that period it has paid $940,000 in dividends and received from sales of copper the sum of $14,080,372. The net profits derived since its corporate existence began to December 31, 1902, amount to $1,034,101.64.

The production of mineral during the calendar year 1902 was 6,847,270 pounds, which yielded about 72 28-100 per cent., or 4,949,366 pounds of refined copper. For 1901 the production of mineral was 6,317,645 pounds, which yielded about 73 87-100 per cent., or 4,666,889 pounds of refined copper. The average price received for the copper output of 1902 was about 11 88-100 cents per pound, as against about 15 76-100 cents per pound realized in 1901. Ground broken in openings and stopes last year was 25,764 fathoms, against 24,883 fathoms in 1901. Rock stamped in

1902 was 446,098 tons, compared with 409,124 tons in 1901. There was expended during the year 1902 for underground operations $309,299.94; net surface expenses, $88,366.89; net railroad expenses, $26,645.48, and net stamp mill expenses, $111,644.18. Total working expenses at mine in 1902 were $535,956.49. Smelting, freight and other expenses were $60,299.79. Expenses of reincorporation and increase of capital stock, $2,653.90. Receipts from sales of copper last year aggregated $588,200.73. There was a deficiency on operations in 1902 of $10,709.45. Interest on loans, cost of exploration on Section 16 for "Baltic lode" and construction account took $38,676.95. There was received for sale to Baltic Mining Company for tracks and locomotive $17,788.39, and reserved from freight account against cost of railroad to Section 16 and Baltic mine $30,000, making net excess of expenditures $1,598.01. The surplus from 1901 was $95,699.65, making the net surplus December 31, 1902, $94,101.64.

The company steadily prosecuted the search for the "Baltic lode" on Section 16 during 1902, but they have not yet been successful in locating it. The search is still kept up, and should result in finding the lode before long, if expectations are realized. A drift was run westward from the shaft on Section 16 in 1901 for 551 feet, and this was continued for a further distance of 1,294 feet in 1902, thus making the end of the crosscut 1,845 from the shaft. A belt resembling the "Baltic lode" was penetrated at a distance of 999 feet, says the agent at the mine, which showed a little copper. A drift was started on this belt in May, 1902, and carried about 33 feet south of the crosscut. The thickness of the belt was about 19 feet horizontally. The belt was found more or less broken up and practically barren, and work there was abandoned. There are other belts nearer the shaft, and drifting on them is advised to test their value.

Operations are carried on at four shafts, designated by letters. The most northerly shaft is known as "A" shaft. It was started in 1897 on the tract of 40 acres purchased in that year, and is now down to the ninth level. "B" shaft is sunk to 79 feet below the twenty-sixth level, and there are connections between "A" shaft and "B" shaft at several levels. "D" shaft was sunk from the thirty-second level to 93 feet below the thirty-third level in 1902. "E" shaft is down to the twenty-ninth level, but sinking stopped here in 1899. There used to be two other shafts in operation, viz., "C" shaft and "F" shaft. A fire broke out in "C" shaft November 9, 1898, which resulted in the destruction of that shaft and its abandonment. "F" shaft was abandoned in June, 1902, as the supply of rock which could be conveniently handled in "F" shaft became exhausted at that time. The duty of the four active shafts is thereby increased.

A new hoist at "D" shaft was completed in 1901. The hoist at this shaft consists of a pair of Nordberg engines 32 x 72 inches, and a drum with a capacity of 5,000 feet of rope. The drum is 12 feet 6 inches in diameter at ends and 18 feet 6 inches at centre. The boiler plant consists of two 100-horse-power boilers, locomotive type, with feed pumps, heater, etc. A powerful hoist was installed at "B" shaft in 1899, consisting of a pair of 24 x 60 inch direct acting Corliss engines, with a double conical drum about 12 feet in diameter at the ends and 25½ feet diameter at the centre. It can hoist a load of 11 tons from a depth of 4,000 feet.

During recent years the company has completed a large amount of new construction work, including a new stamp mill, the building of a railroad from the mine to the mill, the erection of new boiler and engine houses, besides numerous other improvements, which has placed the mine in the most favorable position to produce copper with economy. A new dam was erected across the Salmon Trout River, composed of steel and concrete. It is 468 feet long on the crest, exclusive of wing walls, and 74 feet high above the river bed. The Baltic Mining Company united with the Atlantic Mining Company in dividing the expense of the new dam, as both companies will derive the benefit of an ample supply of water from this source. The dam was completed November 1, 1901, and it supplies the stamp mills of both companies with water by gravity. The stamping operations of the Atlantic Mining Company were removed from Portage Lake, the site occupied by the old mill, to the new location on Lake Superior in 1895. The new stamp mill is equipped with six heads of stamps.

The following is a summary of operations during the last four years:

	1902.	1901.	1900.	1899.
Mineral, lbs.......	6,847,270	6,317,645	6,577,955	6,147,555
Refined copper, lbs.	4,949,366	4,666,889	4,930,149	4,675,882
Gross income	$588,200	$735,577	$809,177	$802,804
Expenses at mine...	535,956	573,341	555,254	508,148
Smelting, etc.......	62,953	62,954	60,301	64,879
Total cost..........	598,910	636,296	615,556	573,027
Mining profit......	*10,709	99,281	193,621	229,777
Construction, etc...	38,676	184,537	114,007	78,527
Surplus for year...	†1,598	†80,262	79,613	151,249
Dividends	———	80,000	80,000	———
Assets December 31.	$94,101	$95,699	$255,962	$256,348
Average price received for copper.	11 88-100c.	15 76-100c.	16 4-10c.	17 15-100c.
Per cent. copper in mineral	72 28-100	73 87-100	75	76

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* Deficiency. † Excess of expenditures over receipts.

At the annual meeting of the stockholders held March 11, 1902, the capital stock of the Atlantic Mining Company was increased from 40,000 shares of $25 each to 100,000 shares of $25 each, and the corporate existence of the company decided upon for a period of 30 years from December 31, 1902, the date when the charter for the company as first organized expired. The expense of reincorporation and increase of capital stock was $2,653.90. The company has paid in dividends a total of $940,000.

Assets and Liabilities of Atlantic Mining Company, December 31, 1902.

Assets.

Cash		$23,077.65
Copper on hand, sold		108,579.87
Cash and supplies at mine		92,366.41
Merchandise in store at mine		82,161.26
Accounts receivable		570.86
		$306,756.05

Liabilities.

Indebtedness at mine	$44,507.49	
Loans	160,000.00	
Accounts payable	8,146.92	
		212,654.41
		$94,101.64

Officers of the Atlantic Mining Company are the following:

JOSEPH E. GAY, *President.*
JOHN STANTON, *Treasurer.*
J. R. STANTON, *Secretary.*

Directors:

JOSEPH E. GAY,
JOHN STANTON,
J. R. STANTON.
WM. C. STUART,
J. W. HARDLEY,
WM. A. PAINE.

Office, 15 William Street, New York.

Transfer Agent, American Loan and Trust Company, 53 State Street, Boston.

Registrar, Boston Safe Deposit and Trust Company, 87 Milk Street, Boston.

The annual meeting of stockholders is held on the second Tuesday in March in each year.

Summary of Results.

Atlantic Mining Company.

	1902.	1901.	1900.
Ground broken in openings and stopes, fathoms	25,764	24,883	23,071.5
Rock stamped, tons	446,098	409,124	410,674
Product of mineral, pounds	6,847,270	6,317,645	6,577,955
Product of refined copper, pounds	4,949,366	4,666,889	4,930,149
Yield of refined copper, per cubic fathom, pounds	192	187	213
Yield of rock treated, per cent	.5547	0.57	0.60
Gross value of product, per ton rock treated	$1.3185	$1.7977	$1.97
Cost per ton of mining, etc	.8914	1.1048	1.0358
Transportation to mill, per ton	.0597	.0767	.0692
Stamping and separating, per ton	.2503	.2198	.2470
Working expenses at mine, per ton	1.2014	1.4013	1.3520
Freight, smelting, marketing product and New York office expenses	.1411	.1539	.1470
Cost per ton of running expenses	1.3425	1.5552	1.4990
Total expenses (including construction), per ton of rock treated	1.3461	2.0224	1.7765

Production of Refined Copper.

Atlantic Mining Company.

Month.	1902. Pounds.	1901. Pounds.
January	400,366	413.383
February	403,967	369,963
March	449,542	369,680
April	458,960	379,468
May	432,596	390,967
June	354,868	357,869
July	379,853	379,537
August	386,684	420,369
September	390.022	353,093
October	449,721	407,175
November	417,400	419,586
December	425,387	405,799
Total twelve months	4,949,366	4,666.889

Production of the Atlantic Mining Company for the first half of 1903 was as follows:

1903.	Refined Copper.
January	427,949 lbs.
February	428,389 "
March	435,191 "
April	445,859 "
May	476,285 "
June	489,426 "
Total six months	2,703,099 lbs.

The average mineral yield of Atlantic for September, 1903, was said to be the highest for many years, showing better than 20 pounds per ton the third week. The production of refined copper by the Atlantic Mining Company in July, 1903, was 445,360 pounds; August, 424,962 pounds, and September, 488,101 pounds. Total for the first nine months of 1903, 4,061,522 pounds.

UTAH CONSOLIDATED GOLD MINES, LIMITED (HIGHLAND BOY GOLD MINING COMPANY).

The property of the Highland Boy Gold Mining Company, comprising about 300 acres, is situated on the Oquirrh range of mountains, Salt Lake County, Utah, about two and one half miles from Bingham Station, on the Rio Grande Western Railroad.

The mine is operated by means of six tunnels, the lowest being 700 feet below the surface. Below the 700-foot tunnel operations have been carried on by means of a shaft, the lowest workings being on the 800-foot level.

The company's ore is transported by means of an aerial tramway 12,700 feet to Bingham Station, from which point it is conveyed by the Rio Grande Western Railroad to the company's smelter, situated at Murray, about ten miles south of Salt Lake City. The present smelter has a capacity of 500 tons of raw ore per day.

In the year 1901 the company produced 9,000,000 pounds of fine copper, 176,000 ounces of fine silver and 14,000 ounces of fine gold. In the year 1902 the company considerably increased its output of copper, silver and gold, the product for that year being 11,840,431 pounds of fine copper, 160,915.59 ounces of fine silver and 19,078.98 ounces of fine gold. The foregoing product in 1902 was obtained from the treatment of 167,022 tons of sulphide copper ore and 691 tons of oxidized ore.

The Utah Consolidated Gold Mines, Limited, owns 2,490 shares of the 2,500 shares of the Highland Boy Gold Mining Company. The profits on the Highland Boy operations last year amounted to $850,000.28. The company paid in December, 1902, a dividend of $534,000.

The Highland Boy Gold Mining Company has a capital stock of $250,000, divided into 2,500 shares of $100 each. The Utah Consolidated Gold Mines, Limited, is capitalized at £300,000, divided into 300,000 shares of £1 each, fully paid. The president of the Highland Boy Gold Mining Company estimates that on December 31, 1902, there were 1,050,000 tons of sulphide ore in sight at the mine, an increase of 100,000 tons over the reserves on December 31, 1901.

At the extraordinary meeting of the Utah Consolidated

Gold Mines, Limited, held in London on June 22, 1903, the resolution for putting the company into voluntary liquidation and the appointment of a liquidator was passed by the shareholders unanimously. The new company has been incorporated in this country. The Highland Boy Company has declared a dividend of $1.50 per share, payable on exchange of the share certificates of the Utah Consolidated for the shares in the new company.

The output of copper bullion by the Highland Boy in September, 1903, was stated at 1,203,720 pounds.

Directors of the Utah Consolidated Gold Mines, Limited:

JOHN E. DUDLEY RYDER, *Chairman*,
URBAN H. BROUGHTON,
M. JAMES BURN,
CHARLES S. HENRY,
JESSE LEWISOHN.

Officers of the Highland Boy Gold Mining Company:

URBAN H. BROUGHTON, *President*.
F. P. ADDICKS, *Secretary and Treasurer*.
Office, 11 Broadway, New York.

The new company is known as the Utah Consolidated Mining Company, and has a capital of $1,500,000. The officers of the Utah Consolidated Mining Company are:

URBAN H. BROUGHTON, *President*.
ADOLPH LEWISOHN, *Vice-President*.
F. P. ADDICKS, *Secretary and Treasurer*.

Office, 11 Broadway, New York.

The smelting capacity of the Utah Consolidated Mining Company is to be increased by 40 per cent.

Production in October, 1903, was reported at 1,200,000 pounds of copper bullion.

Total dividends paid to July, 1903, amount to $1,692,000.

IMPORTS OF COPPER.

Imports of copper into the United States were as follows:

For Calendar Year.

Free of duty. Pigs, bars, ingots, etc.	1902. Pounds.	1901. Pounds.
From United Kingdom	27,762,838	43,838,699
From France	843,523	1,022,178
From Germany	1,245,354	3,117,951
From other Europe	255,072	74,470
From British North America	386,361	953,576
From Mexico	68,565,175	23.024,376
From Cuba	801,016	1,013,460
From other West Indies	190,972	390,201
From other countries	3,079,257	391,495
Total pigs, bars, ingots, etc	103,129.568	73,826,406
Ore and regulus.	Tons.	Tons.
From United Kingdom	3,999	1,011
From Germany	169	153
From British North America	154.737	55,641
From Mexico	22,264	30,469
From South America	354	8,470
From other countries	43	303
Total ore and regulus	181.566	96,047
Total value	$21,746,939	$26,504.861

For Calendar Year.

Free of duty.	1900.	1899.
Pigs, bars, ingots, etc., pounds	68,797,591	71,922,340
Ore and regulus, tons	54,329	31,637
Total value	$15,752,980	$12,382,973
	1898.	1897.
Pigs, bars, ingots, etc., pounds	54,166,467	16,578,420
Ore and regulus, tons	3,063	5,173
Total value	$4,775,035	$2,270,606
	1896.	1895.
Pigs, bars, ingots, etc., pounds	11,397,273	9,381,800
Ore and regulus, tons	2,731	9,634
Total value	$1,310,549	$1,244,042

EXPORTS OF FOREIGN COPPER.

Exports of foreign copper from the United States were as follows:

Calendar Year.

	1902.	1901.
Ore and regulus, tons	14,446	9,891
Pigs, bars, ingots, etc., pounds	11,629,877	12,888,083
Total value	$3,834,434	$3,552,116

	1900.	1899.
Ore and regulus, tons	964	1,715
Pigs, bars, ingots, etc., pounds	1,281,782	2,550,149
Total value	$382,455	$616,245

	1898.	1897.
Ore and regulus, tons	3,403	593
Pigs, bars, ingots, etc., pounds	23,647,968	406,598
Total value	$1,985,424	$115,337

	1896.	1895.
Ore and regulus, tons	480	1,097
Pigs, bars, ingots, pounds	———	475,588
Total value	$32,715	$154,200

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EUROPEAN VISIBLE SUPPLY OF COPPER, AND LONDON PRICES FOR CASH STANDARD COPPER.

1902.

Dates.	Total visible supply. Tons.	Dates.	Price of cash Standard copper. £ s. d.
January 1	22,051	January 2	49 1 3
January 15	22,113	January 15	45 7 6
February 1	23,312	February 3	56 10 0
February 15	23,185	February 17	55 12 6
March 1	23,573	March 3	53 15 0
March 15	26,479	March 17	53 12 6
April 1	28,124	April 1	52 12 6
April 15	27,027	April 15	53 5 0
May 1	27,011	May 1	52 10 0
May 15	25,542	May 15	54 10 0
June 1	24,264	June 2	54 10 0
June 15	23,103	June 16	54 10 0
July 1	23,219	July 1	52 13 9
July 15	21,492	July 15	52 15 0
August 1	21,313	August 1	52 18 9
August 15	20,306	August 15	51 8 9
September 1	20,275	September 1	51 13 9
September 15	17,874	September 15	53 10 0
October 1	17,245	October 1	52 5 0
October 15	17,992	October 15	52 0 0
November 1	16,657	November 3	52 2 6
November 15	15,653	November 17	51 2 6
December 1	16,707	December 1	49 12 6
December 15	16,080	December 15	50 5 0
December 31	16,540	December 31	52 15 0

Decrease in foreign visible supply of copper from January 1, 1902, to December 31, 1902, amounted to 5.511 tons. Decrease since August 15, 1900, to December 31, 1902, was 15,920 tons.

EUROPEAN VISIBLE SUPPLY OF COPPER, AND LONDON PRICES FOR CASH STANDARD COPPER.

1900-1901.

Total visible supply of copper in England and France, and afloat thereto from Chili and Australia, on the following dates, in tons of 2,240 pounds:

1900. Dates.	Total visible supply. Tons.	Price of cash Standard copper.	£ s. d.	1901. Dates.	Total visible supply. Tons.	Price of cash Standard copper.	£ s. d.
Jan. 1	22,817	Jan. 2	70 0 0	Jan. 1	28,860	Jan. 2	72 17 6
Jan. 15	22,035	Jan. 15	70 12 6	Jan. 15	28,752	Jan. 15	71 17 6
Feb. 1	21,327	Feb. 1	71 15 0	Feb. 1	28,904	Feb. 1	71 0 0
Feb. 15	22,740	Feb. 15	75 0 0	Feb. 15	28,256	Feb. 15	71 5 0
Mar. 1	22,982	Mar. 1	75 0 0	Mar. 1	28,995	Mar. 1	70 13 9
Mar. 15	23,515	Mar. 15	77 10 0	Mar. 15	27,262	Mar. 15	68 15 0
Apr. 1	24,632	Apr. 2	78 10 0	Apr. 1	28,231	Apr. 1	69 1 3
Apr. 15	26,642	Apr. 17	78 17 6	Apr. 15	27,277	Apr. 15	70 6 3
May 1	27,475	May 1	76 5 0	May 1	27,535	May 1	69 7 6
May 15	27,044	May 15	73 5 0	May 15	26,751	May 15	69 7 6
June 1	29,204	June 1	72 10 0	June 1	27,231	June 3	69 3 9
June 15	29,313	June 15	72 5 0	June 15	28,108	June 17	68 16 3
July 1	29,263	July 2	71 15 0	July 1	27,462	July 1	68 0 0
July 15	28,044	July 16	72 5 0	July 15	27,489	July 15	68 2 6
Aug. 1	28,913	Aug. 1	73 17 6	Aug. 1	27,395	Aug. 1	67 7 6
Aug. 15	32,460	Aug. 15	74 2 6	Aug. 15	26,180	Aug. 15	65 8 9
Sept. 1	30,175	Sept. 3	72 17 6	Sept. 1	25,821	Sept. 2	66 13 9
Sept. 15	29,135	Sept. 17	73 11 3	Sept. 15	24,838	Sept. 16	67 8 9
Oct. 1	29,133	Oct. 1	72 7 6	Oct. 1	24,765	Oct. 1	63 10 0
Oct. 15	28,543	Oct. 15	72 2 6	Oct. 15	22,536	Oct. 15	64 2 6
Nov. 1	28,812	Nov. 1	71 18 9	Nov. 1	20,965	Nov. 1	65 2 6
Nov. 15	29,400	Nov. 15	72 5 0	Nov. 15	20,360	Nov. 15	66 10 0
Dec. 1	29,222	Dec. 3	72 12 6	Dec. 1	20,570	Dec. 2	60 15 0
Dec. 15	28,792	Dec. 17	71 13 9	Dec. 15	20,892	Dec. 16	51 2 6
Dec. 31	28,860	Dec. 31	72 17 6	Dec. 31	22,051	Dec. 31	49 0 0

BALTIC MINING COMPANY.

This comparatively new property has been developed and equipped within a little over five years, and during the calendar year 1902 made 6,285,819 pounds of refined copper. The company was organized in November, 1897, under the laws of the State of Michigan, with a capital of $2,500,000, divided into 100,000 shares of $25 each. The property comprises 800 acres of land in Sections 20 and 21, immediately south of Section 16 of the Atlantic Mining Company, in Michigan.

The real estate of the Baltic Company was purchased from the St. Mary's Canal Mineral Land Company for $1,000,000, and operations were begun in December, 1897. An assessment of $1 per share was called January 12, 1898, for carrying on exploration work, and since the commencement of operations work has gone steadily forward under the able and experienced management having matters in charge. The lode on the property was one previously unknown, and its discovery awakened great interest. When the company took possession of the property there was only one habitation within a radius of nearly three miles of the mine. Two pits had been sunk on the lode, one 66 feet and the other 22 feet in depth; but the work of opening up the mine had progressed so well that by July, 1899, stamping was begun with one head at the Atlantic Mill.

It was considered the safest and wisest policy to test the quality of the rock coming from the new lode before undertaking to erect a new stamp mill for the Baltic's own use. As the test proved satisfactory, and the production and yield of copper per ton of rock stamped both continued to increase, the work of erecting a new stamp mill to treat the Baltic rock was commenced in 1900, and the first head of stamps was started crushing rock in December, 1901. The delivery of machinery for the mill and mine was greatly delayed, owing to the heavy demand for such material throughout the country, and it was not until August, 1902, that the four head of stamps were all in operation. Three of the heads in the new mill were stamping rock from the Baltic Mine and one head rock from the Champion Mine until March, 1903.

In the year 1902 the Baltic Company stamped 275,175 tons of rock, which yielded 6,285,819 pounds of copper. This copper was sold at an average of 11 872-1000 cents per pound, thereby giving a mining profit of $182,762.07. No other Lake Superior mine ever succeeded in producing an equal amount of copper within five years after operations were started, unless possibly the Calumet & Hecla. The returns from the Baltic show a gradual increase in the average yield of copper per ton of rock stamped. During the six months in which stamping was done in 1899 the yield of copper was 17 pounds per ton of rock stamped; in 1900 the average was 19 58-100 pounds, and in 1901 it rose to 23 pounds of ingot copper to the ton of rock. In the year 1902 the average yield of rock treated was 22 842-1000 pounds per ton, or 1.1421 per cent. There has been an improvement lately, however, and the rock has given still better results. In the month of March, 1903, the company stamped 38,417 tons of rock, which gave an average of 24.16 pounds per ton of rock stamped. The product in refined ingot copper for that month was 928,279 pounds, which was sold at an average price of 14.57 cents per pound, and gave a profit of $63,000.

The new Baltic Mill is expected to be soon stamping 2,000 tons of rock daily. It is the intention of the management to push developments to the point where the mine will be able to keep the mill employed up to its full capacity, and, with that accomplished, operating costs should lessen. The Copper Range Consolidated Company became the holder of 92,811 shares of the capital stock of the Baltic Mining Company in 1901. The said shares were deposited with the American Loan and Trust Company, of Boston, and afterward exchanged for a like number of shares of the capital stock of the Copper Range Consolidated Company. Since the above mentioned date all but 27 shares of the Baltic Mining Company are either owned by the Copper Range Consolidated Company or held by the directors of the company in the interest of the absorbing company.

The discovery of the new amygdaloid lode on the Baltic property started interest in the whole south range in Michigan. As this mineral range extends more than fifty miles southwest from Houghton, the stimulus for exploring and developing this vast tract has led to the opening of several new mines upon it. Operations have turned out very successful, and a new field of copper supply has arisen to contribute its resources to the extent of many millions of pounds of copper annually.

There are five shafts on the Baltic property, and their aggregate depth on February 1, 1903, was 2,396 feet. Sinking was done at shafts Nos. 3, 4 and 5 in 1902. Shafts Nos. 3 and 4 are the deepest, and both are down 695 feet. Shaft No. 5 is down 527 feet. Shafts Nos. 1 and 2 are down 219 and 260 feet, respectively. The total of new drifts and cross cuts made last year amounted to 5,786 feet. Shaft No. 1 is the discovery shaft, and will not be sunk below the present depth. The Baltic has an extensive territory, and the shafts are well spread out, with plenty of space between each one for mining. The rock in the "Baltic" belt is of a grayish color, and in some places considerable epidote, quartz and chlorite are found. In some places the lode is over 50 feet in width, and in other parts of the mine it narrowed to 16 feet. The formation has been exposed for nearly 3,000 feet, and will undoubtedly furnish mineral of good quality for many years to come.

Shafts Nos. 3, 4 and 5 are the principal ones on the property, and are 10 by 24 feet, with three compartments. A new hoist was erected at No. 3 last year, consisting of a pair of 24-inch by 60-inch Corliss engines, built to hoist a net load of 9½ tons from a depth of 2,000 feet. As this shaft had only reached a depth of 695 feet at the end of 1902, the present equipment will answer all requirements for a long time. The engine house is a substantial building, 43½ by 48½ feet, built upon concrete foundations, with the main walls of stone and roof of steel. A new Nordberg hoist has been ordered for Shaft No. 4. An engine house of steel, 40 by 50 feet, and foundation for hoist have been completed. There was also a new steel shaft house and rock house erected at No. 4 shaft last year. The main building is 36 by 56 feet, with wing 19½ by 50 feet. It is 95 feet in height and contains rock bins of 800 tons capacity. A steel shaft-house and rock house combined, equipped with rock breakers, hammers, etc., was erected at No. 5 shaft in 1901. The dimensions of this building are 37 by 51 feet, with wing 29 by 51 feet. The height of same is 97 feet, with rock bins of 1,040 tons capacity.

The Baltic Stamp Mill is a steel building 195 feet by 174 feet, and contains four heads of the most approved modern style stamps. The boiler house in connection with the mill is 54 by 90 feet, also constructed of steel. The mill is located on the shore of Lake Superior, near the Salmon Trout River. A large dam was erected at this point to furnish water for both the Baltic and Atlantic stamp mills. The structure is composed entirely of steel and concrete, and measures 427 feet long, exclusive of wing walls, and 74 feet high above the river bed. The dam was completed November 1, 1901, and into its construction there entered about 8,000 cubic yards of concrete, besides a great amount of steel. No. 1 head in the stamp mill went into commission December 16, 1901; No. 2 head on February 25, 1902; No. 3 head was started early in August last year, and No. 4 head the latter part of the same month. No. 4 head was employed in stamping rock from the Champion Mine until the end of February, 1903, but since that date the entire four heads have been treating rock from the Baltic Mine. The main compressor plant was completed in 1901, and has a capacity for delivering 4,000 cubic feet of air per minute at 65 pounds pressure and at 75 revolutions per minute. The plant is located between No. 3 and No. 4 shafts. The steam cylinders of the compressor are 22 and 36 inches diameter, and air cylinders 24 and 28 inches diameter, all of 48-inch stroke. The building containing the compressor is 36 by 58 feet, having stone walls with steel roof and concrete foundation. The boiler plant adjoins the compressor house, and is in a building 49 by 76 feet. There is a self-supporting stack of steel, with brick lining, having a diameter of 7 feet inside and a height of 140 feet above the base, or 158 feet above the ground. The refined copper produced from the Baltic Mine is tough and hard without being brittle, and is said to be specially good for making valves. The color is also good.

Statement of Receipts and Expenditures from Date of Organization to December 31, 1902.

Baltic Mining Company.

Receipts.

Capital stock issued for purchase of mine	$1,000,000.00
Assessment No. 1, January 12, 1898	100,000.00
Assessment No. 2, October 27, 1898	100,000.00
Assessment No. 3, September 18, 1899	300,000.00
Assessment No. 4, April 3, 1901	300,000.00
From sale of copper (1898), 25,000 lbs. at 12.33 cts.	3,082.50
From sale of copper (1899), 621,336 lbs. at 16.93 cts.	105,240.58
From sale of copper (1900), 1,735,060 lbs. at 16.49 cts.	286,046.85
From sale of copper (1901), 2,641,432 lbs. at 16.43 cts.	433,947.78
From sale of copper (1902), 6,285,819 lbs. at 11.87 cts.	746,276.02
	$3,374,593.73

Expenditures.

Real estate (Baltic Mine location)	$1,000,000.00	
Real estate (land since purchased)	14,751.00	
	$1,014,751.00	
Net expenditure for additional equipment, mining operations, smelting and marketing copper, taxes and incidentals	2,576,673.32	
		$3,591,424.32
Excess of expenditures over receipts		$216,830.59

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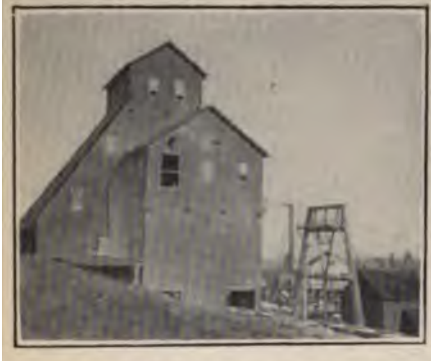
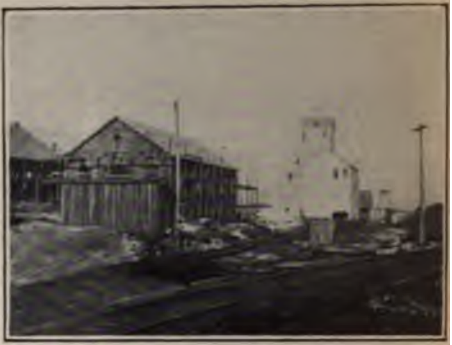
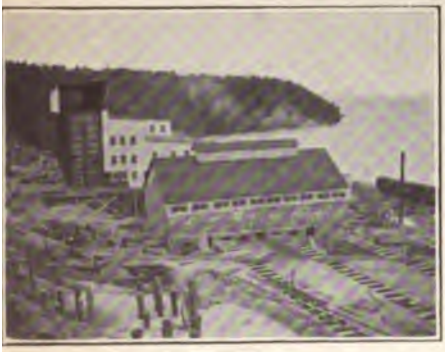


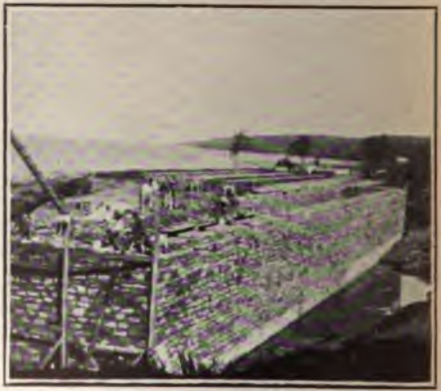
NO. 3 SHAFT HOUSE, BALTIC MINE.



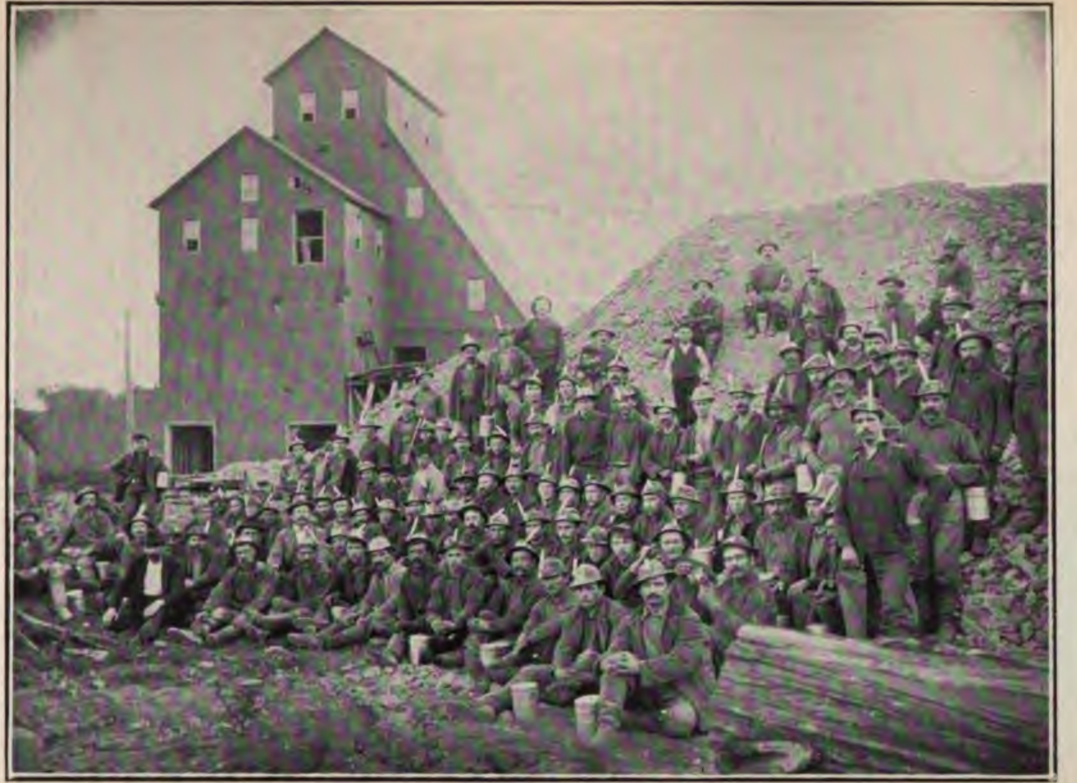
BALTIC MINE CARPENTER SHOP, NO. 4 STE
SHAFT HOUSE AND NO. 5 STEEL SHAFT HOUSE.



AL PLATEAU, BOILER PLANT AND BALTIC MILL
WHEN NEARING COMPLETION.



FOUNDATION BALTIC STAMP MILL.



BALTIC MINE SHAFT HOUSE AND STOCK PILE.

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TIONS

Officers of the Baltic Mining Company are:

JOHN STANTON, *President.*
J. R. STANTON, *Secretary and Treasurer.*

Directors:

JOHN STANTON,
JOSEPH E. GAY,
WILLIAM A. PAINE,
SAMUEL L. SMITH,
CAMERON CURRIE.

Office, 15 William Street, New York.

The production of the Baltic Mining Company for the first half of 1903 was as follows:

1903.	Refined Copper.
January	682,052 lbs.
February	689,318 "
March	928,279 "
April	828,652 "
May	889,832 "
June	836,318 "
Total six months	4,854,451 lbs.

The Baltic output in refined copper for July, 1903, was 994,198 pounds; in August, 1903, 935,088 pounds, and in September, 1903, 949,267 pounds. Total for first nine months of 1903 was 7,733,004 pounds.

DIVIDENDS BY AMALGAMATED COPPER COMPANY.

The following are the dividends paid by the Amalgamated Copper Company since its organization in April, 1899:

	Date of dividend payment.	Per cent.	On capital of	Amount of dividend.
No. 1.	October 16, 1899...	2	$75,000,000	$1,500,000
No. 2.	January 22, 1900..	2	75,000.000	1,500.000
No. 3.	April 30, 1900.....	2	75,000.000	1,500,000
No. 4.	July 30, 1900.....	2	75,000,000	1,500,000
No. 5.	October 29, 1900...	2	75.000,000	1,500,000
No. 6.	January 28, 1901..	2	75,000,000	1,500,000
No. 7.	April 20, 1901.....	2	75.000,000	1,500,000
No. 8.	July 29, 1901.....	2	155,000.000	3,100.000
No. 9.	October 28, 1901...	1½	155,000,000	2,325,000
No. 10.	January 27, 1902..	1	155,000.000	1,550,000
No. 11.	May 26, 1902.....	½	155.000,000	775,000
No. 12.	August 25, 1902...	½	155,000.000	775,000
No. 13.	November 24, 1902.	½	155,000,000	775.000
No. 14.	February 24, 1903.	½	155,000,000	775,000
No. 15.	May 25, 1903......	½	155,000,000	775.000
No. 16.	August 31, 1903...	½	155,000.000	775.000
No. 17.	November 30, 1903.	½	155,000,000	775,000
	Total dividends ...			$22,900,000

Less the amount credited against the comparatively small number of unissued shares.

UNITED METALS SELLING COMPANY.

This company was organized in 1899, under the laws of the State of New Jersey, with a capital of $5,000,000. It was formed for the purpose of taking over and continuing the metal business formerly carried on by Messrs. Lewisohn Brothers. The business was entrusted to the same general management which heretofore conducted that of Lewisohn Brothers. The United Metals Selling Company sells the products of the Amalgamated Copper Company and affiliated companies, and is therefore the largest handler of copper in the world.

The business of the company is on a colossal scale, and the yearly sales of copper are enormous, being for domestic and foreign account. The output from the Montana refineries of the Amalgamated Company, and that from the extensive Electrolytic Works at Raritan, N. J., passes through the company's hands, besides the production of a number of Lake Superior mines.

Messrs. C. S. Henry & Company, London, are the European agents of the company.

The officers of the United Metals Selling Company are:

ADOLPH LEWISOHN, *President.*
H. H. ROGERS, *Vice-President.*
URBAN H. BROUGHTON, *Treasurer.*

Directors:

H. H. ROGERS,
WM. ROCKEFELLER,
ADOLPH LEWISOHN,
F. P. OLCOTT,
JESSE LEWISOHN,
URBAN H. BROUGHTON,
A. W. EVARTS.

Office, 11 Broadway, New York.

IMPORTS OF COPPER AND MANUFACTURES INTO THE UNITED STATES DURING THE CALENDAR YEAR 1902—BY CUSTOMS DISTRICTS.

Districts into which imported.	Ore and regulus.		Pigs, bars, ingots, plates, etc.		Manufactures.
	Tons.	Dollars.	Pounds.	Dollars.	Dollars.
Baltimore	5	740	24,422,161	3,742,423	3
Boston	—	—	340,194	36,784	1,241
New York	41,370	328,764	20,782,433	2,526,131	26,614
Perth Amboy	—	—	23,872,221	2,706,207	—
Philadelphia	1	11	83,560	8,635	17,418
Galveston	112	10,073	—	—	—
Arizona	16,822	5,197,640	33,224,359	3,989,141	—
Corpus Christi	4,367	701,922	—	—	21
Paso del Norte	911	200,901	—	—	10
Puget Sound	110,382	898,957	16,194	1,327	—
San Francisco	168	25,802	22,123	1,368	127
Champlain	—	—	192,366	21,351	—
Memphremagog	809	26,024	—	—	100
North and South Dakota	5,949	1,274,571	28,936	3,074	—
Superior	531	22,424	—	—	3
All other districts	139	7,351	145,021	14,718	6,927
Total	181,566	8,695,780	103,129,568	13,051,159	52,464

STATEMENT OF THE PRODUCTION OF COPPER IN 1902.

By United States Geological Survey.

Returns from all the more important producers of copper and from nearly all the minor producers show that the output of copper in the year 1902 was as follows:

	1901. Pounds, fine.	1902. Pounds, fine.
Lake Superior	156,289,481	170,609,228
Montana	229,870,415	288,903,820
Arizona	130,778,611	119,944,944
California	33,667,456	25,038,724
Utah	20,116,979	23,939,901
Colorado	9,801,783	8,422,030
New Mexico	9,629,884	6,614,961
Wyoming	2,698,712	889,228
Nevada	593,608	164,301
Idaho	480,511	227,500
South Dakota	753,510	445,663
Southern and Eastern States	6,860,039	13,509,047
Lead desilverizers	531,530	500,000
	602,072,519	659,299,847

STOCKS.

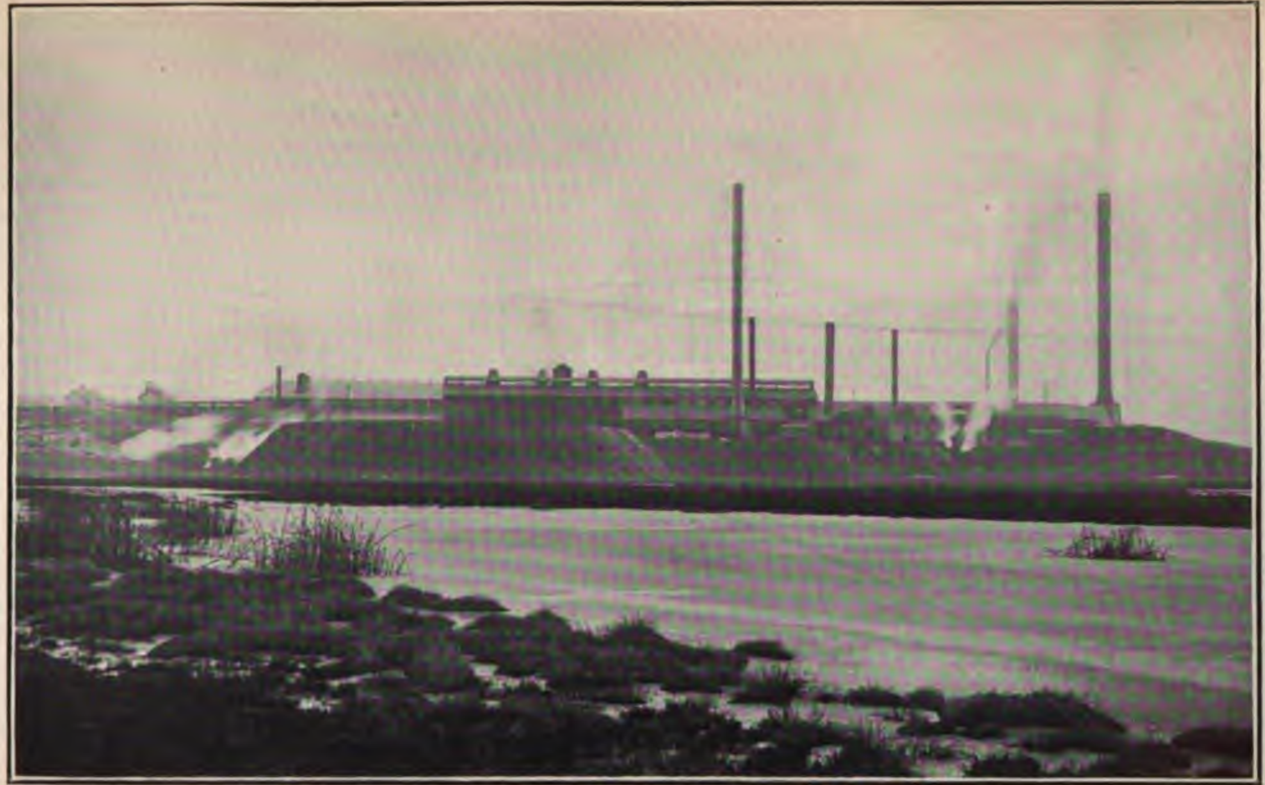
All the large producers of copper, with the exception of two Lake mines, have submitted a statement of the stock of metal. In the aggregate, these reporting mines represented a production of 456,779,663 pounds out of a total of 641,620,340 pounds, or 71 per cent of the production. They reported a stock of 155,665,652 pounds of copper on January 1, 1903, as compared with 282,014,297 pounds on January 1, 1902, a decline of over 126,000,000 pounds during 1902.

BINGHAM CONSOLIDATED MINING AND SMELTING COMPANY.

The Bingham Consolidated Mining and Smelting Company was incorporated April 24, 1901, under the laws of the State of Maine, with a capital stock of $10,000,000, divided into 200,000 shares of $50 each. There are held in the treasury for future uses of the company 50,000 shares of the above. The company is a reorganization of the Bingham Copper and Gold Mining Company, which was organized under the laws of the State of New Jersey in 1898 with a capital of $2,000,000, divided into 200,000 shares of $10 each.

Of the stock of the present company 100,000 shares were issued in exchange for the 200,000 shares of the Bingham Copper and Gold Mining Company, and 50,000 shares for the purchase of the Dalton & Lark, Brooklyn, Antelope, and other groups of mines, for the purchase of the Copper Belt Railway from the terminus of the Rio Grande Western Railroad to the Bingham mine, and for providing $1,000,000 cash in the treasury, leaving 50,000 shares unissued in the treasury of the company, to be used only for the purchase of additional mines or for such other purposes as may be deemed advisable by the directors.

The Dalton & Lark and other groups of mines purchased consist of 28 claims, embracing over 200 acres located in the Bingham district in convenient proximity to the Bingham mine.



SMELTER OF THE BINGHAM CONSOLIDATED MINING AND SMELTING COMPANY.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

The company is now an active producer of copper, and, having erected a splendid plant, equipped with up-to-date modern facilities, it is in position to carry on operations on a large scale and along economical lines. The Bingham camp has become a very active and important mining centre, and has the advantage over some other districts in that its ores contain gold, silver and copper values.

Since the company took charge of the property there has been a great deal of development work done and substantial progress made. During the year 1902 the installation of a converter plant consisting of two stands and six shells was completed at the company's big smelter, together with a large blowing engine to furnish blast and all the necessary equipment for an up-to-date converting plant. This is now reducing the matte from the Bingham furnace to blister copper, which product is shipped East for refining, as it contains values in gold and silver which are in excess of the copper values.

At the Dalton & Lark mine there was installed last year a complete power plant, consisting of four marine boilers equipped with mechanical stokers and force draft, and a compound two-stage Rand air compressor with a capacity of 2,200 cubic feet of free air per minute. This plant is now running, and is operating all the drills and the hoists in the mines of this group.

The company has also completed a five-mile electric tramway fully equipped with locomotive, generator, etc. This tramway connects the various shaft openings with the ore pockets, which are located at the terminus of the railroad, which is also owned by the Bingham Company and was completed in 1902. This railroad is three miles long and connects with the trunk line of the Rio Grande Western Railway.

An important feature of operations at this property is the driving of the big Dalton & Lark tunnel to intercept the ore bodies which are being worked above. This tunnel is to drain the mines, and ultimately to give an avenue for the taking out of the ores which will be extracted from the various groups of mines. This tunnel is now in a distance of 6,000 feet, having been driven 2,958 feet during the year 1902.

The Miner's Dream is one of the properties of the Bingham Consolidated Mining and Smelting Company at which development work is now being prosecuted. The tunnel on this property has been driven 1,700 feet to connect with the workings of the Brookline mine. The shaft at the Brookline mine has reached the 1,400-foot level, and the shaft in the Miner's Dream has been sunk to the depth of 850 feet. At this group 16,000 feet of prospecting and development work has also been done.

At the Commercial Mine there have been driven 4,800 feet in prospecting and development work during the year 1902. The second tunnel has been driven to intercept the ore bodies 360 feet lower on the vein, which vein has now been reached and the ore bodies exposed.

The Bingham smelter is located at Bingham Junction, Utah, on the Rio Grande Western Railway, 12 miles from Salt Lake City and 13 miles from the mines. The smelter is equipped with four water-jacketed blast furnaces, 42 x 172 inches. The blast for these is furnished by three No. 7½ and one No. 8 Root blowers. The smelter is now equipped so it has a capacity of 20,000 tons of ore per month, and is rated as one of the most efficient in operation. Among the points in its favor are its simplicity of operation and the ability to treat ore in an economical manner. The main smelter building is a steel structure 350 feet long, with dust chamber running from this building to the smokestack over 375 feet long, making a total length of 725 feet. The steel smokestack is 12 feet in diameter and 200 feet high above the foundation of 20 feet. The first of the smelter furnaces was blown in on January 31, 1901.

The converter plant of the Bingham Consolidated Mining and Smelting Company consists of two stands and six shells, and has a capacity of 1,000,000 pounds of blister copper per month. The blast for the converter is furnished by a Rarig Corliss blowing engine, 26 x 48 x 52 inches stroke.

The boiler plant consists of four 250 horsepower Sterling boilers equipped with American automatic stokers. The converters themselves are of the horizontal cylindrical type, 7 feet by 10 feet 6 inches.

In addition to the foregoing the plant is completely equipped with the small machinery necessary to a first class smelter, including briquetting machine for bricking flue dust, sampling mill, large and fully equipped machine shop, etc. The smelter construction as designed is now completed, and the whole plant, which is strictly modern, is in first class shape and is making a very fine showing.

The company was reported to be recently treating from

15,000 to 20,000 tons of ore per month. The ore was said to run from 2½ to 5 per cent copper, and the gold and silver in the blister copper to average about 50 to 60 per cent of the total value of the bullion.

The Bingham Consolidated Mining and Smelting Company are alive to the situation in Bingham, and are protecting themselves on all sides so as to strengthen their position wherever they think it advisable. With the recent improved outlook for copper and the developments and prospects at the property, the Bingham is expected to show the results of skillful operation and fine equipment.

The production of copper bullion by the Bingham Consolidated Mining and Smelting Company for the first six months of 1903 was 3,534,335 pounds.

The first stack of the smelter went into commission on October 5, 1903. It is expected to treat 500 tons of ore per day. The remaining stack will be started as soon as possible.

The Bingham Consolidated Mining and Smelting Company has made a contract with the Boston Consolidated Company to smelt 200 tons of ore per day for a period of two years. This arrangement will add materially to the revenues of the Bingham Company from smelting sources. In October, 1903, the company was said to be securing ore from Dalton & Lark and Brooklyn properties in amount averaging 3,000 tons per month, besides 500 tons per month of lead ore from the same claims. The Commercial group was reported to be furnishing about 300 tons of ore daily to the Bingham smelter. The Bingham has the advantage of excellent management, and is developing into one of the leading Utah properties.

JAMES J. PHELAN,
OF HORNBLOWER AND WEEKS,
BOSTON - NEW YORK.

T[illegible]
PU[illegible]
[illegible] NOX AND
[illegible] ONS.

The officers of the Bingham Consolidated Mining and Smelting Company are as follows:

E. L. WHITE, *President.*
O. E. WELLER, *Treasurer.*
H. W. WESSON, *Secretary.*
D. McVICHIE, *General Manager.*

Directors:

E. L. WHITE,
O. E. WELLER,
J. A. CORAM,
J. W. WEEKS,
W. F. HAMMETT,
WILLIAM BAYLY,
O. P. POSEY,
L. T. TRULL,
C. K. McCORNICK,
W. S. McCORNICK,
P. L. KIMBERLY.

Principal Office, 60 State Street, Boston.

Transfer Office, Federal Trust Company, Boston.

Place of Registration, Massachusetts National Bank, Boston.

ENGLISH COPPER CONSUMPTION.

The following table shows the movement of copper in England and the consumption of the metal in that country during the years stated, in tons of 2,240 pounds:

	1902. Tons.	1901. Tons.	1900. Tons.	1899. Tons.
Imported into England.....	160,201	149,578	154,941	141,610
Exported from England.....	69,156	70,396	56,997	75,271
	91,045	79,182	97,944	66,339
Difference in stocks........	*4,154	*6,768	†5,840	*4,159
Apparent consumption, including sulphate of copper exported	95,199	85,950	92,104	70,498
Exports of sulphate of copper	10,822	9,004	10,728	10,045
Consumption	84,377	76,946	81,376	60,453

Decrease. † Increase.

Consumption of copper in England was returned as follows for the years given, in tons of 2,240 pounds:

1898. Tons.	1897. Tons.	1896. Tons.	1895. Tons.	1894. Tons.
69,284	69,787	76,036	50,692	50,330

FOREIGN COPPER CONSUMPTION.

Foreign copper consumption at the following European centres during the first four months of 1903 was as follows, in tons of 2,240 pounds:

England.

	First 4 months. 1903. Tons.	First 4 months. 1902. Tons.	First 4 months. 1901. Tons.	First 4 months. 1900. Tons.
Imports from United States.	7,383	26,774	5,882	12,867
Imports from other countries	39,081	40,233	40,001	41,332
	46,464	67,007	45,883	54,199
Exports, manufactured and unmanufactured	21,636	24,262	20,129	21,772
Difference	24,828	42,745	25,754	32.477
Difference in stocks.........	*2,392	†4,591	*1,389	†2,663
Apparent consumption, including sulphate of copper exported	27,220	38,154	27,145	29,814
Exports of sulphate of copper	8,653	6,201	6,431	7,036
Consumption	18,567	31,953	20,714	22,778

France.

	First 4 months. 1903. Tons.	First 4 months. 1902. Tons.	First 4 months. 1901. Tons.	First 4 months. 1900. Tons.
Imports from United States.	8,861	10,689	6,189	12,308
Imports from England......	1,256	1,913	1,291	774
Imports from other countries	6,122	4,693	7,337	3,739
	16,239	17,295	14,817	16,821
Exported	50	——	250	900
Difference in stocks........	†300	†119	*636	†795
Consumption	15,889	17,176	13,931	15,126

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* Decrease. † Increase.

MOVEMENTS OF COPPER IN GERMANY.

FIRST QUARTER OF 1903.

The movements of copper in Germany during the first quarter of 1903, as per official returns, was as follows, in tons of 2,240 pounds:

	First 3 months. 1903. Tons.	First 3 months. 1902. Tons.	First 3 months. 1901. Tons.	First 3 months. 1900. Tons.
Imports from United States.	13,930	12,516	12,210	16,194
Imports from England......	2,427	2,060	1,768	2,810
Imports from other countries	3,233	2,851	2,524	3,262
Total imports..........	19,590	17,427	16,502	22,266
Exports	2,942	2,298	2,389	2,836
Consumption of foreign copper (pyrites excluded)....	16,648	15,129	14,113	19,430

MOHAWK MINING COMPANY.

The Mohawk Mining Company was organized in November, 1898, and mining operations commenced the same month. Four shafts have been opened on the property, and with a tract of 800 acres of land the company has ample territory for carrying on extensive mining.

No. 1 shaft is located on the northern part of the property, on the N. W. ¼ of Section 27, and has been sunk to the eighth level. The first level north was started at a depth of about 175 feet from the surface. Drifting has been done north and south at each level. In 1900 a fissure vein was discovered 235 feet north from No. 1 shaft at the first level. Its strike was about north and south, and the width of vein about 5 feet. The ore found in this cross fissure vein contained about 60 per cent. copper, besides some nickel, cobalt and arsenic, and the new combination received the name of "Mohawkite."

Drifting on the "Mohawkite" vein was done west and east at the first level, and the same vein was cut at the second level, and the outcrop was also found on surface. Drifting was done on the fissure on the several levels down to the sixth, but at the latter depth the vein has contracted and does not contain any ore. A small quantity of ore was found at the fifth level, but the levels above the "Mohawkite" deposit have become practically exhausted.

In the year 1900 some of this strange ore was shipped for treatment to Swansea and netted $140 per ton. Arrangements were made for having the material regularly treated in a special furnace plant erected for the purpose, and this was done for some time. The ore fell off in copper contents, however, and did not keep up to the percentage of the first shipment sent to market, and with the decline in the price of copper at the end of 1901 and in 1902 the net value realized dropped to about $75 per ton. The finding of the "Mohawkite" cross fissure vein at the Mohawk property was entirely unexpected, and its discontinuance does not affect the mine proper.

The Mohawk operations are carried on on the Kearsarge amygdaloid belt, and a large amount of productive ground has been opened up on this lode, which is similar to that found in the Wolverine and other mines. The "Wolverine-Kearsarge" lode passing through the Mohawk Company's property extends for a distance of about 1½ miles, and it is, therefore, evident that the Mohawk is destined to become a very important mine with the wealth of mineral resources available for extraction. The mine is being opened and equipped for producing on a large scale, and improvements are now nearing a point where this will be realized.

No. 2 shaft is located 1,100 feet south from No. 1, and also on N. W. ¼ Section 27. It has reached a point below the seventh level. The first level was started at a depth of about 100 feet from surface, and drifting has been carried at each level north and south. Openings at No. 2 shaft in 1902 disclosed satisfactory stoping ground, and the lode in the bottom level has been found well charged with good stamp copper.

No. 3 shaft has a depth of 667.5 feet, which it reached in 1901. No sinking was done at this shaft in 1902. Its location is 1,100 feet south from No. 2. Drifting has been done at No. 3 north and south, but the openings last year were more variable, showing both poor and fair ground.

No. 4 shaft is located 1,300 feet south of No. 3. It was started in 1900, and is down 15 feet below the fifth level. The openings made north from this shaft in 1902 were not up to those in other portions of the mine, but on the whole showed stoping ground of fair quality. At the second level south from No. 4 the lode was well charged copper.

All the shafts are of three compartments, 8 x 18 feet within timbers, and have solid cribbing through overburden into the solid rock. They are well built and combine the modern features of approved shaft building.

The openings for the year 1902 were as follows:

	Feet.
Sinking shafts	330.0
Opening levels	7,719.5
Drifting on fissure vein	305.0
Total openings in 1902	8,354.5
Openings made previous to 1902	18,846.0
Grand total to December 31, 1902	27,200.5

The company has a fine new stamp mill of steel, large enough to accommodate four heads of stamps of the largest size and of the most approved modern construction. One steam stamp went in commission in December, 1902, and one in January, 1903. The two heads are doing fair duty, although there was some delay incident to getting the machinery of a new mill in perfect running order. The quantity of rock stamped in December, 1902, was 8,613 tons, which yielded 226,824 pounds of refined copper, or an average of 26 34-100 pounds per ton.

The quantity of rock stamped in the first two months of 1903 was 40,473 tons, which gave 993,064 pounds of refined copper, or an average yield of 24½ pounds per ton of rock. This yield is practically the same as that of the same lode at the Wolverine mine for the nine years ending July 31, 1902, which averaged 24 60-100 pounds per ton of rock during that period. Since that time, however, the management states that the lower workings of the Wolverine mine have improved in richness, and the yield of the Wolverine for the succeeding eight months, viz., from August 1, 1902, to March, 1903, has averaged about 30 pounds of copper to the ton of rock stamped. The rock at the Mohawk mine seems to be somewhat harder than at the Wolverine, as the Mohawk mill has not, as yet, stamped quite as much rock per head as is stamped at the Wolverine mill.

The third head of stamps is expected to be ready to go in commission before the summer of 1903 closes. It is hoped also that the new No. 4 shaft will be ready to hoist rock then. The purpose is to have the fourth head of stamps set up without unnecessary delay after the third head is installed. With four heads of stamps erected the Mohawk stamp mill will then be completed as originally planned.

A new stone engine house has been built at No. 4 shaft to contain a permanent Nordberg hoisting engine already ordered. A steel shaft rock house will also be put up at No. 4 shaft this year. There are many other first class improvements which might be referred to in detail did time and space permit. The Mohawk is a very valuable mine, and with a fair price for copper it should be able to begin the payment of dividends before long.

Operations for the year 1902 resulted as follows:

Receipts.

Balance from 1901	$31.384.67
On account of Assessment No. 1	1,225.00
On account of Assessment No. 2	9,411.00
On account of Assessment No. 3	297,390.00
Sales of "Mohawkite"	77,991.23
Sales of copper (226,824 pounds at 11 65-100 cents)	26,425.91
Balance of interest account	838.41
	$444,666.22

Expenditures.

Expended at mine	$446,070.79	
Transfer office, salaries, etc	6,464.14	
Freight on "Mohawkite"	8,288.90	
Smelting, freight, brokerage and insurance	2,609.19	
		463,433.02
Deficiency December 31, 1902		$18,766.80

To complete equipment, etc., an assessment of $2.00 per share ($200,000) was called, payable January 19, 1903.

Assets and Liabilities.

Mohawk Mining Company.

December 31, 1902.

Assets.

Cash	$2,941.37
Deposit in Trust Company	3,640.47
Copper on hand, sold	26,425.91
Cash and supplies at mine	72,659.31
	$105,667 06

Liabilities.

Indebtedness at mine	$49,429.60	
Loans	72,500.00	
Accounts payable	2,504.26	
		124,433.86
Excess of liabilities December 31, 1902		$18,766.80

Statement of Receipts and Expenditures from Date of Organization to December 31, 1902.

Receipts.

Capital stock issued for purchase of mine..............	$450,000.00
Capital stock issued for cash..........................	300,000.00
Assessment No. 1, $2.50 per share, July 10, 1900........	249,850.00
Assessment No. 2, $3.00 per share, August 19, 1901......	299,193.00
Assessment No. 3, $3.00 per share, May 12, 1902.........	297,390.00
Sales of "Mohawkite"................................	101,941.07
Sales of copper (226,824 pounds at 11 65-100 cents).....	26,425.91
Interest	838.41
	$1,725,638.39

Expenditures.

Real estate (mine location and Traverse Bay Railroad).......................	$450,000.00	
Real estate (lands since purchased).....	6,236.17	
Net expenditures for mining operations, equipment, taxes and incidentals......	1,288,169.02	
		1,744,405.19
Excess of expenditures December 31, 1902........		$18,766.80

The Mohawk Mining Company has a capital stock of $2,500,000, divided into 100,000 shares of $25 each. The officers are:

JOHN STANTON, *President*.
J. R. STANTON, *Secretary and Treasurer*.

Directors:

JOHN STANTON, J. R. STANTON,
JOSEPH E. GAY, WM. A. PAINE,
FRED. SMITH.

Office, 15 William Street, New York.

Transfer Agent, American Loan and Trust Company, 53 State Street, Boston.

Registrar, Boston Safe Deposit and Trust Company, 87 Milk Street, Boston.

The annual meeting of stockholders is held on the last Tuesday in March in each year.

AND WOLVERINE STAMP MILLS.

NO. 3 HOISTING ENGINE HOUSE, BOILER AND COMPRESSOR PLANT, BALTIC MINE.

MAIN BOILER AND COMPRESSOR PLANT.

BOILER HOUSE, HOIST, COMPRESSOR BUILDING AND SHAFT HOUSE, WEST VEIN, PHOENIX MINE.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

Production of the Mohawk Mining Company for the first half of 1903 was as follows:

1903.	Refined Copper.
January	504,675 lbs.
February	488,389 "
March	563,634 "
April	557,498 "
May	515,278 "
June	571,946 "
Total	3,201,420 lbs.

The Mohawk Mine was looking very good in October, 1903. Shaft No. 2 at the ninth level was showing up very well indeed, and it looks as if the mine is improving at depth.

The Mohawk output of refined copper for July was 566,816 pounds, and for August 489,968 pounds, making a total for the first eight months of 1903 of 4,258,204 pounds. In September, 1903, the Mohawk produced 528,035 pounds of refined copper. The new steel shaft and rock house at No. 4 shaft is expected to be completed before the end of 1903. The third head of stamps is also expected to be in operation by that time.

DIVIDENDS BY UNITED STATES COPPER MINES.

A Comparison for the Last Four Years.

Name of company.	1902.	1901.	1900.	1899.
Amalgamated †	$3.875.000	$8.425,000	$6,000,000	$1,500,000
Anaconda	1.200,000	3,900,000	4,800,000	3,900,000
Atlantic	———	80,000	———	———
Boston & Montana	900,000	5.250,000	6,450,000	5,400,000
Butte & Boston	———	600,000	1,000,000	———
Calumet & Hecla	2,500.000	4,500,000	7,000,000	10,000,000
Greene Consolidated	144,000	220,000	———	———
Montana Ore P. Co.	323.332	722,000	240,000	560,000
Osceola	———	576,900	560,400	558,000
Parrot	114.925	1,365,000	1,335,100	1,241,775
Quincy	700,000	900,000	900,000	950,000
Tamarack	———	1.200,000	1,020,000	600,000
United Copper Co.	150.000	———	———	———
Utah Con.	*510,000	732,000	———	———
Wolverine	240,000	240,000	240,000	210,000
Total	$10,657.257	$28.710,900	$29,545,500	$24,919,775

---

† Less amount on unissued shares.

* Declared December, 1902, and paid January, 1903.

CENTENNIAL COPPER MINING COMPANY.

The property of this company is extensive and located contiguous to other well known Lake Superior mines. The Calumet conglomerate and the Osceola and Kearsarge lodes are all found in its mile square of territory. The original objective point was the Calumet conglomerate vein, and seven shafts were sunk to prove the value of this belt on the Centennial's property. Several of these shafts were shallow, but No. 3 and No. 4 were driven deep in the earnest attempt to develop a mine on the conglomerate. No. 6 shaft at the northern end of the property was also sunk below the twelfth level.

The deepest shaft on the Calumet conglomerate is No. 3, which was sunk to the depth of 3,200 feet, and as its location was 4,500 feet north of Calumet & Hecla's No. 5 shaft it was hoped that the vein at No. 3 might bear some resemblance in richness to that found on the property of Centennial's famous neighbor. While the lode was rich in spots, and bunches of copper were exposed, it nevertheless became evident after thorough tests and openings had been made that the conglomerate found on the Centennial's ground would not be able to furnish the material for a regular and profitable production.

The present company was reorganized in 1896, and took up the work of exploring the property to determine upon what lodes operations could be conducted with the best results. As the conglomerate proved a disappointment greater attention was directed to the Osceola amygdaloid lode. There are two shafts sunk to a depth of over 1,000 feet each on the Osceola lode, which has a length of more than a mile on the Centennial's property. The lode proved quite satisfactory and the extensive openings on the vein showed a great deal of good stamp rock.

In 1898 the present management purchased 40 acres of land to the east of their line which carries the outcrop of the Kearsarge lode, and which touched the Centennial property only at one corner. In 1900 the company obtained by an outlay of $20,000 an additional piece of ground connecting these two properties and of ample extent to allow two large modern shafts to pass down from the surface outcrop into the underlying 640 acres of the original Centennial property.

The development of the Kearsarge lode is now one of the prime objects of the company, and this vein is expected to furnish the richest copper on the property. There are two shafts, of modern build and having three compartments, in operation on the Kearsarge amygdaloid, and these are designated as "A" shaft and "B" shaft.

The underground work done at the property during the year ending February 28, 1903, amounted to total openings of 1,409 feet, all of which was on the Kearsarge lode. The company's "A" shaft was sunk 823 feet, and is now down below the twenty-fifth level, or 2,625 feet from the surface, at which point the plot has been cut and drifts are being extended from the shaft both north and south. The shaft is in the southeast corner of the property, at Section 12, and drifts, both north and south, have been relatively short, but as they are incline shafts the chance for more extensive drifts will increase as they go down deeper.

There was a steady improvement noticed in the shaft during the past year, and the eighteenth level was reported good almost its entire length. At the twenty-fifth level drifts have been opened about 150 feet north and south to April, 1903, exposing ground of unusual value. In the lower levels the vein has broadened out, and the mining superintendent is of the opinion that the lode, so far as opened at that point, carries not less than 35 pounds of copper to the ton of rock. There has been erected at "A" shaft a stone engine house 50 x 67 feet, and a Nordberg double hoisting engine 32 x 72 inches went into commission during the past year.

"B" shaft extends practically from the twelfth level to within about 150 feet of surface, but recently shaft sinking has been confined to "A" shaft. The Wolverine mine and the South Kearsarge mine, the latter belonging to the Osceola Consolidated group, are situated east of the Centennial, and the value of the lode upon which all these properties are now operating has been fully demonstrated at the active producers named.

The Centennial has a valuable mill site on Torch Lake, where it is expected a new stamp mill will be constructed when deemed advisable. The old mill with one head ceased operations in 1902, and attention has been concentrated lately in developing the underground workings.

The company called an assessment of $5 per share ($500,000) in November, 1900, payable $3 per share on December 12, 1900, and $2 per share on April 12, 1901.

The following is the financial statement for the year ending December 31, 1902:

Centennial Copper Mining Company—Treasurer's Statement.

December 31, 1902.

Receipts.

To cash on hand January 1, 1902				$153,278.64
" Notes and bills receivable 1901			$44,036.41	
" Sales of copper			33,283.17	
" Right of way deed			200.00	
" Supply account			4,067.53	
" Fuel			13,226.59	
" Rent			2,778.94	
" Interest			4,986.20	
				102,578.84
Expenditures.				$255,857.48
By mining expense			$90,324.43	
" General expense			16,715.14	
" Equipment			15,537.30	
" Construction			581.08	
" Stamping expense			4,261.80	
" Smelting expense			835.74	
" Centennial Heights Township			4,081.17	
" Insurance and taxes			10.940.28	
" Bills payable 1901			17,670.56	
			$160,947.50	
Cash on hand January 1, 1903		$100,279.58		
Bills payable at mine Dec. 31, 1902	$9,638.90			
Bills receivable at mine Dec. 31, 1902	4,269.30			
		5,369.60		
			94,909.98	
				$255,857.48

The Centennial Copper Mining Company has been organized under the laws of the State of Michigan, with a capital stock of $2,500,000, divided into 100,000 shares of $25 each, of which 90,000 shares have been issued.

The officers of the Company are:

H. F. FAY, *President.*
GEO. G. ENDICOTT, *Secretary and Treasurer.*

Directors:

H. F. FAY,
JOHN C. WATSON,
STEPHEN R. DOW,
WM. HOWELL REED,
GEO. G. ENDICOTT,
W. B. MOSMAN,
JAMES CHYNOWETH.

Office, 60 State Street, Boston.

SAINT MARY'S MINERAL LAND COMPANY.

The Saint Mary's Mineral Land Company was reorganized in March, 1901, under the laws of the State of New Jersey, with a capital of $5,000,000, divided into 200,000 shares of a par value of $25 each. The new company in effecting the new organization issued six of its shares in exchange for every share of the original St. Mary's Canal Mineral Land Company's stock, and offered to the holders of the latter who made the exchange the right to take at $25 per share, to be paid for in cash, as many shares of the new company's stock as they held in the old company.

The capitalization of the old company was $1,000,000, divided into 20,000 shares of $50 each. It, therefore, required 120,000 shares of the new company to purchase the outstanding stock of the original corporation, and 20,000 shares were sold for $25 per share. This enabled the new company to start in the spring of 1901 with an issued capital of $3,500,000, or 140,000 shares, and with a treasury fund of $500,000. As St. Mary's company owns 50,000 shares of stock in the Champion Copper Company (one-half), it devolved upon this company to provide its share of the expense of opening and equipping the Champion mine. The treasury fund of $500,000 was all absorbed in meeting the half of the company's share in providing the necessary equipment for the Champion mine.

It was, therefore, decided in October, 1902, to issue

10,000 additional shares of Saint Mary's Mineral Land Company to the stockholders, pro rata, at $25 per share, payable one-half November 20, 1902, and one-half January 20, 1903. This proceeding was deemed good policy, in view of the fact that the Champion mine gave evidence of being a richer and more extensive property than was at first anticipated. It was found that the Saint Mary's company would be called upon for a further sum of about $150,000, in addition to the $500,000 previously contributed, to complete the Champion equipment, including a four-head stamp mill with a stamping capacity of 2,000 tons of rock a day. The old company had contributed sums besides those above mentioned to the Champion Copper Company. The authorized capital, therefore, of the Saint Mary's Mineral Land Company is $5,000,000, divided into 200,000 shares of $25 each, and the issued capital is $3,750,000, divided into 150,000 shares. There are 50,000 shares in the treasury unissued.

The real property of the company on December 31, 1902, consisted of 103,335 53-100 acres, besides the mineral rights in 7,806 56-100 additional acres.

The cash receipts and expenditures for 1902 were as follows:

Receipts.

Cash on hand, December 31, 1901	$273,735.92
Payments for new stock:	
Circular of March 5, 1901	2,250.00
Circular of October 25, 1902	189,512.50
Payments for land	4,051.50
Payments for wood and pine timber	35,548.75
Ground rent	1,684.19
Interest on contracts and bank balances	2,258.80
Sundry other income	1,737.59
	$510,779.25

Expenditures.

Champion Copper Company Assessments	$300,000.00
Advances to Champion Copper Company	50,000.00
Trimountain Copper Company Assessment	366.00
Winona Mining Company Assessment	842.00
120 shares St. Mary's stock	3,000.00
Exploration outfit	5,720.82
Exploration labor and supplies	12,077.11
Taxes	12,434.65
Salaries and expenses at Houghton	3,277.93
Salaries and expenses at Boston	2,934.00
Charter tax	3,250.00
Total expenditures	$393,902.51
Cash on hand December 31, 1902	$116,876.74

Sales during the year 1902 were 530 acres of land, the mineral rights to which were reserved, for $4,560.00. Wood and timber, $37,045.00. There was expended in 1902 the sum of $17,797.93 in exploration work, nearly all at a single point, but without importance. All of the shares of the St. Mary's Canal Mineral Land Company have been acquired and are held by the present reorganized company. Outside of the company's holdings of land, its interest in several copper companies, through its ownership of stock in various corporations, forms a good portion of the valuable assets of the St. Mary's company.

The combined assets and liabilities of the Saint Mary's Mineral Land Company on December 31, 1902, were as follows:

Assets.

Land unsold, 103,335 53-100 acres, valued at	$2,142,649.01
Mineral rights to 7,806 56-100 acres	1.00
Stock in Champion Copper Company, 50,000 shares	1,250,000.00
Stock in Pacific Copper Company, 20,000 shares	40,000.00
Stock in Copper Range Company, 86 shares	5,160.00
Stock in Winona Copper Company, 842 shares	5,052.00
Stock in Old Colony Copper Company, 80 shares	240.00
Stock in Trimountain Mining Company, 122 shares	10,980.00

Stock in Mayflower Mining Company, 25,000 shares....	$50,000.00
Stock in St. Mary's Mineral Land Company, 600 shares.	15,000.00
New stock subscriptions unpaid......................	60,487.50
Notes receivable....................................	50,000.00
Land contracts in force.............................	1,250.00
Wood contracts in force.............................	2,303.75
Cash	116,876.74
	$3,750,000.00

Liabilities.

Capital stock, 200,000 shares...........	$5,000,000.00	
Less unissued stock, 50,000 shares......	1,250,000.00	
		$3,750,000.00

A short review of the history of the company has been given by Mr. Arthur G. Stanwood, and is as follows:

"The company was organized in 1858, to hold, explore, improve, manage and sell such as might be conveyed to it of the mineral lands belonging to the St. Mary's Falls Ship Canal Company. The lands so conveyed comprised some 180,000 acres, lying for the most part in the counties of Houghton, Ontonagon and Keweenaw, Michigan, and included the greater part of the land now being developed by the Calumet and Hecla, Tamarack, Quincy and other mining companies. Three-fourths of the capital stock (15,000 shares, of a par value of $50 per share) were used to pay for the land purchased, and the remaining fourth was sold at its par value. Considerable expenditures were made in explorations during the first ten years. The explorations were made for the purpose of ascertaining the value of the lands, and not with the idea of engaging in mining operations, the efforts of the company from the first having been to dispose of the lands as soon as their approximate value could be ascertained. Up to the year 1861 sales of land were comparatively slow, but the breaking out of the war in that year and the great advance in prices of all commodities which followed its first depressing effects caused an active demand for copper lands. Through the whole period of the war the price of copper was high, the highest price having been reached in July, 1864, when it was quoted in New York at 59¾ cents per pound, and as a result the land sales of the company were large."

The lands of the Saint Mary's Mineral Land Company lie between two points ninety miles apart, and about three-fourths of it is on the mineral range. In 1897 copper bearing rock was discovered six miles south of Houghton, and 800 acres of land was sold to the Baltic Mining Company. This discovery awakened great interest in the whole South Range, as the mineral range extending more than fifty miles southwest from Houghton is called. In the latter part of 1899 the Copper Range Railroad Company opened its lines from Greenland to Houghton, a distance of forty miles, thus securing the donation of 2,240 acres of land from the Saint Mary's company in consideration of putting the road in operation, and by the performance of other minor conditions to be subsequently fulfilled. The new railroad brings all the lands of the company on the South Range within comparatively easy access, and will be of great benefit to the new mining enterprises which have recently started up in that district.

In recent years the company has sold several tracts of land, upon which promising mines have been opened, and in some of which it has an interest, through its ownership of shares in different of the new organizations.

During the period of its existence the St. Mary's Canal Mineral

Land Company paid in dividends and made the following distributions of stock to shareholders in the company, viz.:

	Distributions.	Per share.
No. 1.	March 18, 1863	$6.00
No. 2.	April 30, 1864	10.00
No. 2A.	September 1, 1864, ¼ of a share Albany & Boston Mining Company per share.	
No. 3.	September 30, 1864	30.00
No. 4.	August 31, 1865	8.00
No. 5.	November 30, 1865	4.00
No. 6.	February 28, 1866	2.00
No. 7.	October 31, 1866	3.00
No. 8.	April 30, 1867	4.00
No. 9.	December 31, 1875	2.00
No. 10.	December 24, 1880	1.50
No. 11.	July 16, 1883	2.00
No. 12.	July 1, 1884, 1 share Tamarack Mining Company per share.*	
No. 13.	March 25, 1885	2.00
No. 14.	September 15, 1886	2.00
No. 15.	March 1, 1888	1.00
No. 16.	September 1, 1888	1.00
No. 17.	August 15, 1890, 1 share Iroquois Copper Company per share.	
No. 18.	April 1, 1891	1.00
No. 19.	February 1, 1892	1.00
No. 20.	January 1, 1894	5.00
No. 21.	January 2, 1895	5.00
No. 22.	June 6, 1895	5.00
No. 23.	September 6, 1895	11.00
No. 24.	February 10, 1897	1.00
No. 25.	November 11, 1897	3.00
No. 26.	December 24, 1897	3.00
No. 27.	January 25, 1898, 1¼ shares Baltic Mining Company per share.	
No. 28.	October 25, 1898	5.00
No. 29.	November 18, 1898	3.50
No. 30.	December 23, 1898, ½ share Winona Copper Company per share.	
No. 31.	January 13, 1899	10.00
No. 31A.	January 13, 1899, 1 share Old Colony Copper Company per share.	
No. 32.	March 8, 1899	15.00
No. 33.	March 15, 1899, 1½ shares Trimountain Mining Company per share.	
No. 34.	November 28, 1899	4.00

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* *Note.*—The privilege had been previously given to the holders of our shares to subscribe for an equal number of shares of Tamarack stock at $10 per share.

The directors of the Saint Mary's Mineral Land Company declared a dividend of $1 per share, payable October 1, 1903.

The officers of the Saint Mary's Mineral Land Company are:

NATHANIEL THAYER, *President.*
CHARLES J. PAINE, *Vice-President.*
ARTHUR G. STANWOOD, *Treasurer.*

Directors:

NATHANIEL THAYER,
SAMUEL N. BROWN,
ALBERT S. BIGELOW,
J. HENRY BROOKS,
CHARLES J. PAINE,
CHARLES E. PERKINS,
W. CAMERON FORBES,
GEORGE P. GARDNER,
J. MALCOLM FORBES,
WALTER HUNNEWELL,
CHARLES N. KING.

Office, 704 Sears Building, Boston, Mass.

The St. Mary's Mineral Land Company paid a dividend of $1 per share on October 1, 1903. This is the first dividend paid on the stock of the reorganized company, of which there are 150,000 shares outstanding. The old company had 20,000 shares and paid its last dividend of $4 per share November 28, 1899.

NEW YORK PRICES OF COPPER FOR 42 YEARS.

The following shows the highest and lowest prices, in cents per pound, for Lake Superior refined ingot copper in the New York market for the past 42 years, and the months in which extreme prices were recorded:

Years.	Months the lowest prices were recorded.	Range of prices covering the year.	Months the highest prices were recorded.	Years.
1860	December	19¾ @ 24	January	1860
1861	July	17½ @ 27	December	1861
1862	May	20¾ @ 32⅞	Oct. and Nov.	1862
1863	July	29 @ 38¾	December	1863
1864	January	39 @ 55	July	1864
1865	July	28 @ 50½	January	1865
1866	November	26½ @ 42	January	1866
1867	December	21½ @ 29¼	January	1867
1868	January	21½ @ 24½	July and Dec.	1868
1869	December	21½ @ 27	February	1869
1870	March	19 @ 23⅜	November	1870
1871	April	21¼ @ 27	December	1871
1872	January	27⅛ @ 44	April	1872
1873	November	21 @ 35	January	1873
1874	August	19 @ 25	January	1874
1875	January	21½ @ 23⅞	September	1875
1876	August	18¾ @ 23¼	January	1876
1877	December	17½ @ 20½	February	1877
1878	October	15½ @ 17⅝	January	1878

PRICES OF COPPER FOR 42 YEARS.—CONTINUED.

Years.	Months the lowest prices were recorded.	Range of prices covering the year.	Months the highest prices were recorded.	Years.
1879	January	15½ @ 21¾	November	1879
1880	June	17⅞ @ 25	January	1880
1881	July	16 @ 20⅜	December	1881
1882	April	17⅞ @ 20⅜	January	1882
1883	November	14⅞ @ 18⅛	January	1883
1884	December	11 @ 15	January	1884
1885	May	9.80 @ 11⅞	February	1885
1886	May	10 @ 12⅛	December	1886
1887	May	9.95 @ 17¾	December	1887
1888	January	15.85 @ 17.60	November	1888
1889	September	11 @ 17½	January	1889
1890	March	14 @ 17¼	July	1890
1891	December	10¼ @ 15	January	1891
1892	February	10½ @ 12⅜	December	1892
1893	August	9.60 @ 12½	January	1893
1894	June	9 @ 10¼	January	1894
1895	April	9⅜ @ 12¼	August	1895
1896	January	9¾ @ 12	June	1896
1897	November	10¾ @ 12	January	1897
1898	January	11 @ 13¼	December	1898
1899	January	13¼ @ 19¼	April	1899
1900	February	16 @ 17¼	April and May	1900
1901	December	13 @ 17	February, etc.	1901
1902	January	11 @ 13½	February	1902

UNITED STATES COPPER PRODUCTION FOR TEN YEARS.

In Tons of 2,240 Pounds Fine.

Official Returns.

Whole year.	United States. Tons.	Foreign reporting mines. Tons.	Total combined production. Tons.
1902	295,656	108.875	404,531
1901	265.263	100,241	365,504
1900	268,787	89,421	358,208
1899	262,206	89,240	351,446
1898	234,272	84,553	318.825
1897	216,106	88.270	304,376
1896	203.894	86,396	290.290
1895	171,197	86.178	257,375
1894	159,623	88,531	248.154
1893	142,480	81.785	224,265
Total ten years	2,219,484	903,490	3,122,974

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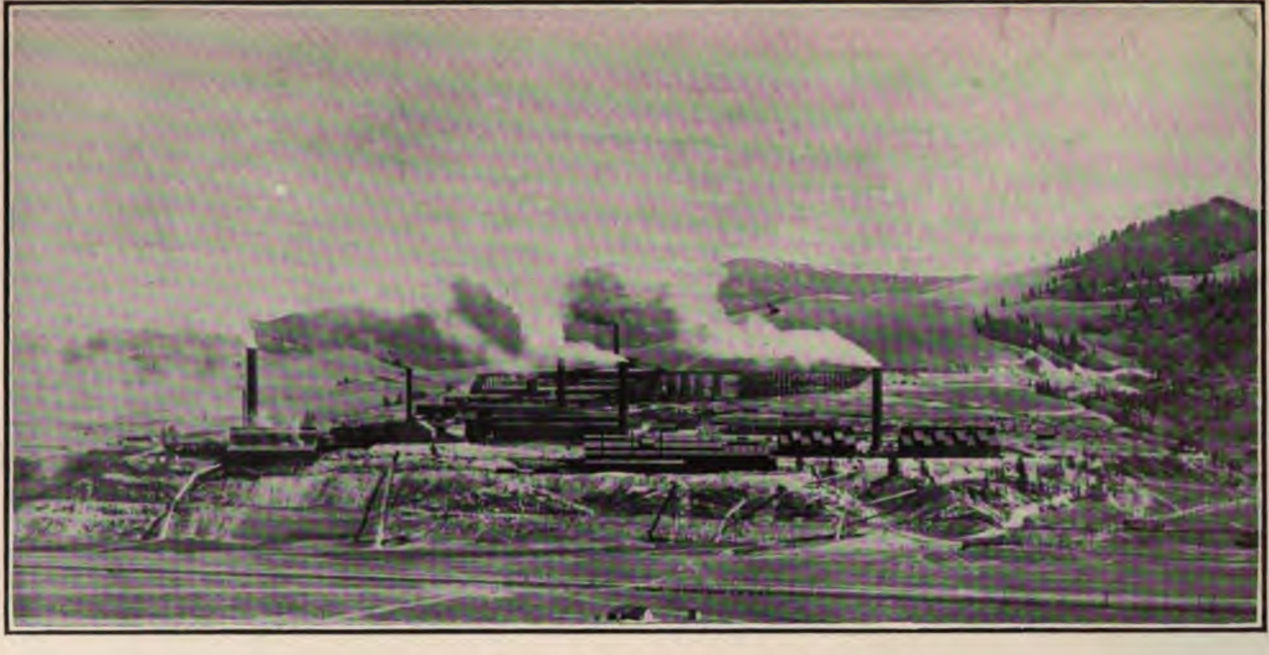
NEW REDUCTION WORKS.
ANACONDA COPPER MINING COMPANY,
ANACONDA, MONTANA.

For some years there was more or less planning relative to building a new reduction works on the hillside near East Anaconda, and plans had been made and the site purchased for the purpose of building a works for the Washoe Copper Company.

The old works of the Anaconda Copper Mining Company were built a number of years ago, and, though they were the largest and best of the kind at the time they were built, still improved methods and appliances that had been perfected since the works were first built, together with deterioration owing to constant usage and wear and tear, made it necessary to remodel them to more or less extent. The cost of remodelling the old works and adapting them to new conditions influenced the management to reconsider the plans that had been made for the new Washoe Smelter, keeping the idea in view of building a plant that would have sufficient capacity to treat all the ore that was being treated in the old works.

Early in the year 1900 Mr. Frank Klepetko was made manager of the reduction works, and he, in conjunction with Mr. Daly, the president of the Anaconda Copper Mining Company, determined to outline plans for a reduction works that would eventually have capacity sufficient to treat five thousand tons of ore per day. Preliminary plans



NEW SMELTER AT ANACONDA, MONTANA.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS.

were made and the probable cost estimated, and in April of that year the president and executive board of the Anaconda Copper Mining Company authorized the building of the new reduction works.

The work was of such magnitude and the expenditure of money would be so great that it was found necessary to employ a large number of engineers and draughtsmen to make final plans for machinery and buildings, and an engineering staff of from twenty to twenty-five men was constantly employed in designing the buildings and appliances for doing the work. The work was soon fairly launched. Careful surveys of the whole hillside were made, together with surveys for the railway lines necessary to reach the works, and also for the location of the flume that would carry water from Warm Springs Creek to the site of the new works.

The conception of the idea which has taken form and is completed was worked out by Mr. Klepetko, as manager, and the men whom he employed.

The site of the new works is on an imposing hillside near East Anaconda, and, together with the necessary tracks, storage bins, etc., occupy over three hundred acres.

In giving a description of the works it is best to take for a starting point the building in which the ore is first received, which is the Concentrator Building. The ore, as it is brought in from the mines, is delivered in steel cars on top of steel ore bins that are about 70 feet high, and the ore is dumped automatically into these bins. These bins are practically two stories in height; the upper part of the bins is used as a receiving bin for the ore as it comes from the mines, and the lower part of the bin is used for storing coarse concentrates and the ore that has passed through Sampling Mill, which is situated just back of the concentrator. Custom ore and other ores necessary to be sampled are also dumped into the upper bins. These bins are partitioned off into sections, part of them being used for concentrating bins and the others for sampled ore. Custom ore and other ores that are necessary to sample are taken from the bottom of these upper bins and conveyed to the Sampling Mill by an electric tram car. The ore that is suitable for smelting is taken from the Sampling Mill after it has been sampled, and delivered to the lower bins in this structure. All of the work is made as automatic as possible.

The Sampling Mill is 42 feet wide and 60 feet long, and is 5 stories in height. It is equipped with crushing machinery and sampling machines sufficient to treat 1,000 tons of ore per day of 24 hours.

The Concentrator Building proper is in two parts of four sections to each part. Each part is 250 feet wide by 350 feet deep. Its estimated total capacity is 5,000 tons in 24 hours. The Concentrator Building proper is divided into several departments. The first department is called the crushing department; it is 5 stories in height and equipped with heavy machinery for doing the first crushing of the ore—eight large Blake crushers that will receive a piece of ore that is 10 inches wide and 20 inches long and 12 or more inches in height, and crush into cubes not larger than 2 inches in size. From these large Blake crushers the ore passes to sixteen smaller crushers, which take the ore and crush it finer still. Between each of these operations a separation takes place, and the ore is separated from the gangue by automatic machinery.

The next department is the jig department, equipped with 432 Evans jigs. These jigs take the ore and separate it from the gangue automatically, and as soon as the separation has taken place the ore is automatically conveyed to storage bins, and the gangue is taken to another crushing department, where it is crushed still finer and again put through a separating process in jigs.

The next department is the regrinding department, where the ore is reground in Huntington mills of special design, and the ore is ground as fine as the finest sand. This department is fitted with sixteen 5-foot Huntington mills and twelve 6-foot Huntington mills, and another separation takes place in this department, and the ore is automatically conveyed to storage bins. There are 144 Evans jigs in this department.

The next two departments are table departments, which treat all the fine material which the mills make. These two departments are fitted with 230 Wilfley concentrating tables and 23 Overstrom concentrating tables. The concentrates from the whole mill are conveyed into large storage bins constructed of timber and located at the lower end of the concentrator. These bins are 650 feet long and 70 feet wide, and will hold several thousand tons of concentrates.

The power house, in which is located the machinery for furnishing power to the works, is located between the two halves of the concentrator, and it is 136 feet wide and 148 feet long. The power house contains two four-cylinder triple-expansion Nordberg-Corliss engines that are capable of developing, at a maximum load, 3,600 horsepower each. In this power house is also located one four-cylinder triple-expansion Fraser & Chalmers Corliss engine that was originally used to furnish power at the World's Fair. This engine will develop, at maximum, 1,150 horsepower. If space permitted, the description of the machinery and the apparatus auxiliary thereto for transmitting the power used at the great Anaconda plant could be further extended, but we must pass on to the consideration of the other features of interest at the new reduction works.

There was used in the construction of the power house building, ore bins, concentrator building proper and in the steel railroad approaches to the building over 6,000 tons of steel and over 10,000,000 feet of lumber. The building itself occupies a space of nearly seven acres, and is one of the largest plants of this kind in the world. It is fully equipped with the most modern machinery for the treatment of Butte ores. The total cost of the power plants and the Concentrator Building approximated $2,000,000.

The Reverberatory plant consists of two buildings—one building 182 feet wide and 174 feet long, the other building 182 feet wide and 225 feet long. These buildings contain 14 reverberatory furnaces. In the centre, between the two buildings, there is a large stack of the same size as of the roaster building, viz., 23 feet 6 inches outside diameter and 200 feet high, exclusive of the foundations. Four large flues from these two buildings enter the base of this stack. This building is absolutely fireproof. Over 2,500 tons of steel and iron have entered into the construction of this building and the furnaces. The Concentrator and Roaster buildings are connected by tracks about 1,300 feet long. The Roaster Building is 98 feet wide and 330 feet long, and is equipped with 48 McDougall roasters. These roasters are patented by Messrs. F. Klepetko and W. J. Evans. They are capable of handling from 35 to 50 tons of concentrates each per day of 24 hours. The ore is delivered in hoppers that feed into the roasters automatically, and the ore comes out at the bottom of the roasters ready to be taken to the Reverberatory Building. All of the operations are entirely automatic.

The Blast Furnace Building is 82 feet wide and 195 feet long. It is equipped with five large blast furnaces capable of treating over 1,500 tons of material per day of 24 hours. This building is equipped with a dust chamber 40 feet wide and 182 feet long, and a smokestack of the same size as the Reverberatory and the Roaster stacks. There has entered into the construction of this building, smokestack and dust chamber over 500 tons of steel and iron, and into the construction of the furnaces themselves over 300 tons more of steel and iron, besides large quantities of brick and stone.

In connection with the blast furnace plant and storage bins there is a briquetting plant that is 64 feet wide and 175 feet long, with an annex for covering drying machines 47 feet by 150 feet. This building is equipped with powerful briquetting machinery for the purpose of pressing fine material into brick form. These bricks measure about 3½ inches in diameter and 2½ inches in thickness. This material is smelted in the blast furnaces, and it is put into this shape in order to prevent losses by means of fine stuff being carried up and out into the atmosphere by the strong draught in the stacks and the blast in the furnaces.

The Converter plant is contained in a building 177 feet wide and 416 feet long; part of this building is used for a converter repairing plant. This building is equipped with 8 stalls for converters and 24 converter bowls, there being 3 converters to each stall. These converters are the largest that have ever been built; they are 8 feet in diameter and 12 feet 6 inches long. The estimated capacity of the plant is 500 tons of matte per day of 24 hours. This building also contains two reverberatory furnaces that receive the molten matte from the reverberatory and blast furnace plant. The matte is conveyed by means of large ladle cars holding 20 tons of matte in each car. This building has also three copper-casting reverberatory furnaces fully equipped with machinery for casting anodes and bars of copper.

In the Converter Building there are also two electric travelling cranes having a span of 60 feet each and capable of lifting 90 tons each. There have entered into the construction of the Converter Building, dust chamber and stack nearly 2,000 tons of steel, besides large quantities of brick and stone.

For furnishing power to the Blast Furnace and Converter buildings there is a power house, known as the smelter power house, that is 84 feet wide and 525 feet long. In this building there are located 12 Stirling boilers, aggregating 3,150 horsepower; also four large direct-connected Corliss engines and Connersville blowers capable of furnishing 120,000 cubic feet of air per minute for the blast furnaces; also another large Nordberg-Corliss triple-expansion blowing engine for furnishing air for the converters; this engine has a capacity of 20,000 cubic feet of air per minute. There are also two large blowing engines taken from the old works, and two air compressors for furnishing air at 1,000 pounds pressure for operating locomotives, and one for furnishing air at 100 pounds for ordinary purposes. All the necessary condensing apparatus, pumps and auxiliary machines, such as are required in a large power plant of this kind, have been installed in this building. The aggregate horsepower of the machinery employed in the smelter power house is over 5,000 horsepower.

A large new office building 68 feet wide and 95 feet long and a laboratory building 90 feet long and 50 feet wide have been erected. These buildings are constructed of brick and stone, and are fitted with all the appliances and apparatus necessary to conduct the business of this large reduction works.

The water supply for the works is brought to the works in a flume aggregating over seven miles in length, and capable of carrying, under ordinary seasons, the whole flow of Warm Springs Creek for several months in the year, except in flood time. This flume will carry over 50,000 gallons of water per minute, and is built so that its capacity can be increased at least 25 per cent.

The whole works is provided with a system of standard gauge railway tracks for the purpose of carrying on the work between the different plants. These are all interconnected, and one can travel from the upper side of the concentrator clear to the converter plant on railway lines. The motive power is compressed air, compressed to 850 pounds per square inch, and conveyed in pipes all over the works.

All of the machinery and appliances used in the new works have been of the most modern type and make, and the work has been done, in the judgment of experts, in the best possible manner. The construction of the works necessitated the using of 50,000 yards of masonry and the removal of over 250,000 yards of excavation. There were used over 1,000 cars of red brick and firebrick. There were also used over 20,000,000 feet of lumber, exclusive of about 5,000,000 feet more, used in the construction of the [illegible]. There were used in the construction of the works nearly [illegible] pounds of structural steel and cast iron [illegible] of machinery, etc., and there were delivered [illegible] cars of all kinds of material that [illegible] of the plant.

[illegible] to-day is regarded as the fruition [illegible] idea as to what a reduction works [illegible] and bringing the great plant to [illegible], as Chief Engineer, was the [illegible] manager of the works, and by [illegible] able assistants, the great [illegible] put in operation. The [illegible] turned out 13,500,000 pounds of refined copper during [illegible] 1903, and said to be [illegible] pounds more than was ever produced in one month.

FRANK KLEPETKO.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

CHAMPION COPPER COMPANY.

The Champion Copper Company was organized in October, 1899, with a capital of $2,500,000, divided into 100,000 shares of $25 each. The territory owned by the company consists of 1,210 acres, and in effecting the organization the St. Mary's Mineral Land Company and the Copper Range Company each contributed about 600 acres of land and each received 50,000 shares of the Champion Copper Company stock. The length of lode on this property is stated at 8,960 feet, and the lode could be mined to a depth of 18,950 feet without going beyond the company's own territory. The stock is full paid, $10.25 per share having been paid for its land, $14.75 per share paid in cash on assessment.

The vein at the Champion Mine is the same as that found on the Baltic and Trimountain properties. Four large three-compartment shafts have been sunk at the Champion Mine, and, although operations only began in 1899, the four shafts had reached an average depth of 601 feet by December 31, 1901. At the same date 10,154 feet of drifting and 707 feet of cross-cutting had been done, and the vein exposed for a total length of 13,265 feet. In April, 1903, the aggregate depth of shafts was 3,600 feet, and the drifts reached a total of 22,000 feet. The lode has proved remarkably rich and persistent, and the character of the openings leads to the belief that the mine is perfectly able to supply 2,000 tons of rock per day for the next twenty years and over from the ground already proven. Besides all this, the length of the lode on the Champion's land is twice that which has been developed.

The product for the year 1902 was 4,165,784 pounds of refined copper, for which 11.823 cents per pound was realized. The company began stamping with one small head at the Atlantic Mill in January, 1902. In August, 1902, one head at the Baltic Mill began stamping Champion rock, and on November 28, 1902, one head at the company's own new mill went into commission. The total rock treated by the three heads mentioned during the year 1902 was 121,478 tons, which yielded an average of 34.29 pounds of copper per ton of rock. With such a showing the valuable character of the property can be readily appreciated.

The Champion Mine is south of the Trimountain, and the Trimountain adjoins the Baltic Mine. The four shafts on the Champion are the "B" shaft, "C" shaft, "D" shaft and "E" shaft. The deepest is the "E" shaft, which is down 1,014.93 feet. The four shafts were sunk an aggregate of 1,000.50 feet last year. In December the number of rock drills in commission was 43. A new quadruple compressor of the Nordberg type, with a capacity of 100 drills, is to be installed in a recently constructed building 45 by 86 feet erected for the purpose. The new compressor house is built of stone, with steel roof, and the boiler house adjoining will contain three 250-horsepower Geary water-tube boilers of 300 pounds steam pressure.

The new stamp mill, constructed of steel, was completed in the summer of 1902. It is built to contain four heads of stamps having a total capacity of treating 2,000 tons of rock daily. The first head was started in November, 1902, and the second the month following. There are three heads of stamps now in commission, and the fourth is expected to start operating soon. The stamps are of a new design, built by the Nordberg Manufacturing Company, and are made to run compound. The installation of two additional heads is contemplated, as it is believed the mine will be perfectly able to furnish the necessary rock to keep six heads of stamps all working, particularly after the new compressor is installed. New machine and blacksmith shops have also been erected, and equipped with the requisite modern appliances. The opening of this new mine and the erection of the fine surface equipment constituting the Champion plant in less than three years have resulted in transforming a bleak and lonely location into a prosperous and attractive settlement of comfortable homes, graded streets, electric lights, a water system and other improvements. These features, together with the fine memorial library erected by the president of the company in memory of his mother, make the new town of Painesdale rank among those deserving special mention for the energetic and progressive spirit displayed at this centre of mining activity.

General Statement by the Champion Copper Company for 1902.

Production.

4,165,784 pounds of copper at 11.823 cents per pound	$492,553.36

Expenditures.

Agents' drafts	$1,058,600.00
Decrease in assets at mine	55,815.80
	$1,114,415.80

Less construction	$697,870.23		
Taxes	12,532.97		
Land	1,128.12		
Sundry accounts	476.54		
		712,007.86	
Running expenses at mine		$402,407.94	
Smelting, freight commissions, etc		62,907.61	
Net operating expenses			$465,315.55
Mining profit in 1902			$27,237.81
Expended for construction		$697,870,23	
Taxes 1901		12,532.97	
Land		1,128.12	
Sundry advances		476.54	
Interest		388.93	
		$712,396.79	
Less received from assessments		600,000.00	
			112,396.79
			$85,158.98
Excess of receipts December 31, 1901			9,424.66
Net deficiency December 31, 1902			$75,734.32

Production of the Champion Copper Company for the first half of 1903, in mineral, was as follows:

January	1,051,315 lbs.
February	1,041,140 "
March	1,164,025 "
April	1,153,275 "
May	1,382,640 "
June	1,528,630 "
Total six months	7,321,025 lbs.

Officers of the Champion Copper Company are:

WILLIAM A. PAINE, *President.*
ARTHUR G. STANWOOD, *Vice-President.*
FREDERIC STANWOOD, *Secretary and Treasurer.*

Directors:

WILLIAM A. PAINE, SAMUEL L. SMITH,
GEORGE P. GARDNER, J. MALCOLM FORBES,
CHARLES H. PAINE, ARTHUR G. STANWOOD,
RICHARD OLNEY.

DR. LUCIUS L. HUBBARD, *General Manager at the Mine.*

Office, 27 State Street, Boston.

GERMAN COPPER CONSUMPTION.

The consumption of foreign copper in Germany, as per official figures, was as follows, in tons of 2,240 pounds:

	1902. Tons.	1901. Tons.	1900. Tons.	1899. Tons.
Imported from United States.	60,274	42,423	66,264	47,742
Imported from England......	8,536	7,653	9.546	14,350
Imported from other countries	11,607	13,079	12,296	12,991
Total	80,417	63,155	88.106	75,083
Exported	8,903	10,277	10,960	12,278
Consumption of foreign copper (pyrites excluded)......	71,514	52,878	77,146	62.805

German consumption of all kinds of copper is returned as follows:

1902. Tons.	1901. Tons.	1900. Tons.	1899. Tons.	1898. Tons.	1897. Tons.	1896. Tons.	1895. Tons.
*105,000	89,548	118,452	102,618	101,519	96,303	85,160	70,362

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* Estimated.

FRENCH COPPER CONSUMPTION.

Returns of copper consumption in France are as follows, in tons of 2,240 pounds:

	1902. Tons.	1901. Tons.	1900. Tons.	1899. Tons.
Imports from United States..	29,455	16.084	29,100	24,695
Imports from England.......	4,082	4,464	2,821	6,296
Imports from other countries.	15,545	17,749	13,493	15,497
Total imports...........	49,082	38,297	45,414	46,488
Exported	160	380	1,900	3,500
Difference in stocks..........	*332	*1,966	†1,078	*670
Apparent French consumption	49,254	39,883	42,436	43,658

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* Decrease. † Increase.

Consumption of copper in France for the years named was returned as follows, in tons of 2,240 pounds:

1898. Tons.	1897. Tons.	1896. Tons.	1895. Tons.	1894. Tons.	1893. Tons.	1892. Tons.
42,652	42,948	40,332	30,658	26,879	36,142	24,928

TRIMOUNTAIN MINING COMPANY.

This company owns 1,120 acres of land in Sections 19, 20, 29 and 30, Township 54 North, Range 34 West, Houghton County, Michigan, and a valuable stamp mill site on the shore of Lake Superior, and another on Portage Lake. The mining lands are about seven miles south of Houghton, and join the Baltic Mine on the north and the Champion on the south.

The company was organized in the spring of 1899, since which time four shafts have been sunk, equipped, and are now in operation, and development work begun for a fifth shaft. The lode, which was uncovered at a distance of 27 feet from the surface, has continued a remarkable mineral-bearing formation, and is unquestionably the same lode that is being worked at Baltic and Champion. The stamping of rock was begun January 1, 1902, the output being steadily increased; and since May 1, 1903, the mine has supplied four heads of stamps of a capacity of 500 tons each per day. On the Lake Superior mill site a new, modern four-head stamp mill has been erected, equipped, and is in operation. The tracks of the Copper Range Railroad connect the mine and mill with Houghton, thus providing adequate railroad facilities.

The company is organized under the laws of the State of Michigan, with a capital of $2,500,000 in 100,000 shares.

At the adjourned meeting of the directors of the Trimountain Company, held September 4, 1903, the directors resigned and a new board was elected. The following new officers and directors were elected to succeed the old board: Wm. A. Paine, President; Frederic Stanwood, Secretary and Treasurer. Directors: Wm. A. Paine, Frederic Stanwood, John Gordon, Charles A. Snow, J. Henry Brooks. There are two vacancies in the new board which are to be filled later. President H. F. Fay made the following statement to his old directors:

"In turning over the management of the Trimountain Mining Company to the owners of a large majority of its stock (the Copper Range Consolidated Company) I wish to say that I am proud of the exceptional record the property has made, a record only possible because of the richness of the mine and the confidence the past owners have seen fit to repose in their directors and officers, by allowing them to pursue the policy which we inaugurated at the beginning, and which we have consistently followed up to the present successful close.

"In the brief time the Trimountain Company has existed we have placed it upon a dividend basis, and with $5 per share possible assessment uncalled, we have opened up and developed our mine until it is possible to supply its present mill of four heads for twenty years, without further development. With the two more shafts which we have planned for, making six in all, and a development similar to that which we have already accomplished, its future seems practically unlimited. We are thus able to enter upon a consolidation with another property whose present and future success is so assured as to satisfy the owners of 70,000 of the 100,000 shares of Trimountain stock that it is for their best interest to exchange their shares for the shares of the Copper Range Consolidated Company.

"While the part your directors themselves have taken in this measure is very perfunctory, it is possible for me to say to the Trimountain stockholders that what has been done is absolutely without the payment of any of the usual underwriting or other commissions, or profit to anyone, which has been largely due to the exceptionally strong and prosperous condition of both companies."

The officers of the Company are as follows:

H. F. FAY, *President.*
GEO. G. ENDICOTT, *Secretary and Treasurer.*
Address, 60 State Street, Boston.

Directors:

H. F. FAY,
JOHN C. WATSON,
STEPHEN R. DOW,
WM. HOWELL REED,
B. NASON HAMLIN,
GEO. G. ENDICOTT,
JAMES CHYNOWETH, *of Michigan.*

ORFORD COPPER COMPANY.

The works of the Orford Copper Company are located at Constable Hook, N. J., and consist of an extensive and well equipped plant for the treatment of copper ores and black copper.

The company have also a nickel refining plant, and are prominent manufacturers of nickel steel. A new plant was erected in 1903 at Constable Hook to meet the present requirements of the company.

At the time the United States decided to use nickel in the manufacture of armor plate for the armored vessels of the navy, the Orford Copper Company put itself in a position to meet the needs of the Government, and established the nickel industry in this country on such a basis that the Government was enabled to get its nickel at the lowest price ever known in the world, and of a very superior quality.

Since this time nickel has been gradually progressing in favor, particularly in its connection with steel. Nickel-steel is now the best known material for boiler plates, shafting, piston and connecting rods, where non-corrodibility is the feature most sought after. Nickel is also much used for handles, wheels, etc., where the moisture of the hand would soon rust other metals.

Nickel is produced at the works of the Orford Copper Company from mattes and ores received both from Canada and New Caledonia, and is placed on the market in the form of oxide and of metallic nickel, such as shot, plaquettes, ingots and bars. The capacity of the plant of the Orford Copper Company for refining from ores and mattes received from various parts of the United States, Canada, Mexico and abroad was reported at about 6,000,000 pounds of copper and 1,000,000 pounds of nickel monthly.

The present Orford Copper Company dates from 1887, but prior to that time operated under the title of the Orford Copper & Sulphur Company, and further back in 1878 as the Orford Nickel & Copper Company. Demand for the company's products on a large scale in 1881 led to the closing down of the Canadian smelting plant at Eustis, and the erection of the works at Constable Hook, N. J. The Orford Copper Company has been very successful, and the location of its plant on the seaboard enables it to receive and ship the products handled at its works under favorable conditions.

IMPORTS OF COPPER INTO THE UNITED STATES.

FIRST SEVEN MONTHS, 1903.

Pigs, Bars, Ingots, etc., lbs.—	First seven months 1903.	First seven months 1902.	First seven months 1901.
From United Kingdom..........	10,331,432	17,081,845	22,219,983
" France	1,794,279	68,205	785,262
" Germany	1,127,530	136,556	1,637,308
" Other Europe.............	....	22,925	259
" British North America....	5,997,894	209,565	475,249
" Mexico	51,995,082	24,575,106	12,823,885
" Cuba	277,778	432,146	544,351
" Other W. I. and Bermuda..	224,310	109,461	233,520
" Japan	2,550,860	336,062	224,532
" Other countries...........	2,647,808	94,153	65,683
Total Pigs, Bars, Ingots, etc...	76,946,973	43,066,024	39,010,023
Matte and Regulus, Tons:			
From United Kingdom..........	380	2,667	....
" Germany	144	89	86
" British North America.....	120,189	43,154	24,222
" Mexico	25,400	17,636	17,823
" South America............	....	322	2,033
" Other countries...........	9	37	179
Total Matte and Regulus......	146,122	63,905	44,943
Aggregate value................	$11,594,900	$12,344,218	$14,578,274

ISLE ROYALE COPPER COMPANY.

The production of the Isle Royale Copper Company during the year 1902 was 5,219,305 pounds of mineral, which yielded 68.374 per cent copper, or 3,569,748 pounds of fine copper. The production in 1901 was 3,172,509 pounds of mineral, of 68.382 per cent copper, or 2,171,955 pounds of refined copper. The gain in output last year was, therefore, 1,397,793 pounds of refined copper, or 64.35 per cent increase, compared with the previous year.

Costs in different departments were reduced last year. Total expense of mining and stamping a ton of rock in 1902 was $1.52, against $1.86 in 1901; and as the yield in ingot copper was about 13½ pounds per ton of rock stamped, against about 11¾ pounds in 1901, results in several particulars showed improvement over the previous year. The table of comparative results appended to this article is an interesting summary of operations during the last two years.

Operations were largely confined to No. 2 shaft in 1902, and since the end of last July the product was derived entirely from ground tributary to this shaft, supplied by the Isle Royale lode. Some good stoping ground was opened up on both the Isle Royale and the Portage lodes. The total drifting done on these two lodes last year amounted to 4,515.7 feet, compared with 8,474 feet in 1901. The Portage lode is from 150 to 220 feet west of the Isle Royale lode, and runs parallel with it. It has been opened by five crosscuts north of No. 1 shaft, from the eleventh to the fifteenth level, inclusive, and has equalled in value, if not exceeded, the average of the Isle Royale lode.

The Isle Royale company erected a new stamp mill in 1900. The mill building is of steel, 135 x 210 feet, and contains three head of steam stamps. The foundations of mill and heavy retaining wall back of building were laid in Portland cement and well built. In order to get solid foundation for the heads of stamps three steel tubes 12 feet in diameter, expanding to 20 feet diameter at the top, were sunk 74 feet through sand to rock bottom, and filled with concrete. The mill site is in many respects one of the best, and the building, with its equipment of machinery and numerous facilities for treating the copper rock from the mine, are first class and reflect the careful planning and foresight of the management.

During 1902 two heads of stamps were in operation for the first three months of the year, and a third head went into commission on April 1. The three heads were kept running from April 1 to July 31, but for the balance of the year 1902 only one head was operated. With three heads of stamps working, the minimum cost for stamping was reached, when the figures per ton of rock stamped were lowered to $1.24. If the recent improvement in the condition of the copper market continues it is probable that another head at least will be started stamping rock.

No. 1 shaft has been sunk 61.5 feet below the sixteenth level. At this shaft a steel rock house was erected in 1900 having dimensions of 44 x 64 feet and resting on solid foundations of masonry. There are rock breakers 18 x 24, and two 13 x 20 size. A 12 x 24 Corliss engine furnishes the requisite power to operate the rock crushers. The hoist at No. 1 shaft is a direct-acting hoist, with combination cone and straight-face drum, and two 32 x 72 Nordberg Corliss engines. The erection of this hoist was completed and went into commission in 1900. The air compressor at No. 1 shaft is the Nordberg make, and is a horizontal, compound duplex, two-stage machine, with Corliss steam cylinders 18 and 32 by 42, and air cylinders 17¾ and 27 by 42, and can supply air to thirty-five drills.

No. 2 shaft is down 69 feet below the sixteenth level. The steel rock house, breakers and engine at this shaft are practically the same as at No. 1 shaft. The hoisting engine is a powerful one of the Nordberg type, with steam reverse, steam brake and turned conical and cylindrical drum, and went into commission in 1900 also. The air compressor at No. 2 shaft is a cross-compound, two-stage machine, 20 x 40 x 44 inches and 35 x 22 x 44 inches. It is a third larger than the compressor at No. 1 shaft and has a capacity of forty drills. Sinking at No. 2 shaft has been in the lode the entire distance from the surface to the sixteenth level. Both the Isle Royale and Portage lodes have been found very bunchy lately, and large reserve openings are necessary for successful operation. The company purchased a diamond drill in July, 1902, and it was put to work in the southern part of the property. Nothing of value had been located by that means up to the middle of February, 1903, but a thorough search and systematic exploration of that section of the mine is expected.

The original Isle Royale was the pioneer mining company on Portage Lake. Work was begun in August, 1852, but for several years prior to that date it was engaged on the island of Isle Royale, in the vicinity of Portage Lake, but without successful results. After settling down on their new location, the existence of three veins about 200 feet apart was discovered. Mining was begun on the middle vein, and this lode has been known since as the Isle Royale. The old company put up a stamp mill of eight heads, and had it in operation in 1853. The stamping facilities were soon afterward increased to sixteen heads, and under a new management the stamp mill was enlarged and the number of stamps increased to forty heads. These stamps were of primitive style and small capacity. The country where the mine is situated in those early days was like a wilderness, and many difficulties were encountered by the operators of fifty years ago. There were ten shafts opened on the mine, and the greatest depth reached was about 800 feet, with lateral openings of 3,000 feet. Mining operations were suspended in 1857, and in the following year the Mabbs brothers took the mine on lease. The lode has a dip of 55 to 60 degrees northwest, and is from 15 to 20 feet wide, of brownish color, with epidote, quartz, calc spar and prehnite found in it. The copper deposits occur in bunches and pockets.

The old Grand Portage mine, another one of the group of mines belonging to the present company, was worked on a small scale in 1853. After producing a little copper, capital gave out and work was suspended. In 1860 there was a reorganization of the company, but the results were meagre. In 1879 the property passed into new hands, and work started on both the Portage and Isle Royale lodes. Both lodes were from 8 to 25 feet wide, and found about 400 feet apart. The Isle Royale lode dips at a greater angle than the Portage lode, with a tendency to meet. After a varied experience the old original Grand Portage mine passed into the control of the present active company operating the same.

The original Huron mine, now owned by the Isle Royale company, had a territory of 960 acres, and carried on operations on the Isle Royale lode as early as 1855. There were ten shafts on the Huron, and over $1,000,000 was expended on the property in its early career. A stamp mill with forty-eight heads of stamps was built, and a good deal of copper was produced and sent to market prior to 1880. In 1879-80 the property was sold and a new company organized, with a capital stock of $1,000,000, divided into 40,000 shares. Operations were carried on for a number of years by the reorganized corporation, and a total product of millions of pounds of copper was taken from the Huron before it became one of the group in the Isle Royale Consolidated Company.

The Isle Royale Consolidated Mining Company was organized in 1897, with the Huron, Isle Royale and Grand Portage mines going into the new company. The capital was $2,500,000, divided into 100,000 shares of $25 each. During the year 1899 the Isle Royale Consolidated Mining Company was changed to the "Isle Royale Copper Company," which was a consolidation of the first named company with the Miners' Copper Company. The present "Isle Royale Copper Company" began its operations on

April 20, 1899, with all the property and cash assets of the old Isle Royale Consolidated Mining Company increased by 1,400 acres of new mining property and $1,000,000 in cash from the Miners' Copper Company. The present company was organized, under the laws of the State of New Jersey, with a capital stock of $3,750,000, in 150,000 shares of $25 each.

The operations of the company during the calendar year 1902 resulted in the following showing:

Gross value of fine copper produced (3,569,748 pounds at 11.91 cents)		$425,125.23	
Gross value of silver produced (18,523.16 ounces at 47.95 cents)		8,881.61	
Balance of interest receipts and other income		66,768.64	
			$500,775.48
Running expenses at mine		$400,539.52	
Smelting charges	$25,461.83		
Transportation	6,403.63		
Commissions, etc	11,179.97		
Miscellaneous expenses at Boston	17,401.14		
		60,446.57	
			460,986.09
Profit			$39,789.39
Balance assets December 31, 1901			406,415.20
Total			$446,204.59
From which deduct—			
Construction expenses		$10,291.56	
Exploration expenses		8,657.88	
			18,949.44
Balance assets December 31, 1902			$427,255.15

ISLE ROYALE COPPER COMPANY.

Comparative Results for 1901 *and* 1902.

	1901.	1902.
Tons rock hoisted	201,951	298,594
Tons rock stamped	185,175	263,672
Pounds mineral obtained	3,172,509	5,219,305
Percentage refined copper in mineral	68.382	68.374
Pounds refined copper per ton of rock hoisted	10.8	12.
Pounds refined copper per ton of rock stamped	11.7	13.5
Product fine copper, pounds	2,171,955	3,569,748
Cost per pound at mine, excluding construction	15.88c.	11.23c.
Cost per pound construction	14.04c.	.29c.
Cost per pound exploration	———	.24c.
Cost per pound of smelting, freights, eastern expenses, commissions and all other charges	2.65c.	1.69c.
Total cost per pound of fine copper	32.57c.	13.45c.
Cost of mining per ton of rock stamped	$1.86	$1.52
Cost of stamping per ton hoisted	22.83c.	23.34c.
Cost of stamping per ton stamped	24.91c.	26.44c.

Assets and Liabilities.

Isle Royale Copper Company.

Assets.

Cash and accounts receivable at Boston	$255,700.53	
Copper on hand (1,209,165 pounds), sold, but not paid for	142,000.00	
Silver on hand (8,100 ounces), sold, but not paid for	3,800.00	
Lake Superior Smelting Company stock	32,000.00	
Cash and accounts receivable at mine	1,626.01	
Supplies on hand at mine	30,894.89	
Total assets		$466,021.43

Liabilities.

Accounts payable at mine	$35,250.17	
Accounts payable at Boston	3,516.11	
		38,766.28
Balance assets December 31, 1902		$427,255.15

The estimated output of the Isle Royale Copper Company for first nine months of 1903, in tons of refined copper, is as follows:

1903.	Tons Copper.
January	110
February	108
March	105
April	105
May	105
June	90
July	100
August	175
September	165
Total	1,063

The officers of the Isle Royale Copper Company are:

A. S. BIGELOW, *President.*
EDGAR BUFFUM, *Vice-President.*
W. J. LADD, *Secretary and Treasurer.*

Directors:

A. S. BIGELOW, EDGAR BUFFUM,
W. J. LADD, C. H. BISSELL,
W. A. S. CHRIMES.

Office, 199 Washington Street, Boston.

The annual meeting of stockholders is held on the first Wednesday in April in each year.

UNITED STATES COPPER CONSUMPTION.

IN TONS OF 2,240 POUNDS.

Based on following approximate calculation as per figures given:

	1902.	1901.
Available Supplies.		
United States production	295,657	265,255
Imports of foreign (partly estimated)	71,178	74,976
Stock first of year (estimated)	100,000	42,000
Total supplies	466,835	382,231
Exported.		
To foreign countries	168,767	94,366
Copper in sulphate	3,400	5,332
Total exports	172,167	99,698
United States Consumption.		
Domestic consumption (estimated)	240,000	182,533
Stocks of Copper at End of Year.		
Estimated stocks, end of year	54,668	100,000

UNITED STATES COPPER MOVEMENTS.

IN TONS OF 2,240 POUNDS.

	1902.	1901.	1900.	1899.
United States production	295,657	265,255	268,787	262,206
United States exports	168,767	94,366	159,612	119,812
Left for domestic consumption from current output	126,890	170,889	109,175	142,394
	1898.	1897.	1896.	1895.
United States production	234,272	216,106	203,894	171,197
United States exports	145,115	129,210	125,605	64,722
Left for domestic consumption from current output	89,157	86,896	78,289	106,475
			1894.	1893.
United States production			159,623	142,480
United States exports			77,131	80,392
Left for domestic consumption from current output			82,492	62,088

THE SHANNON COPPER COMPANY.

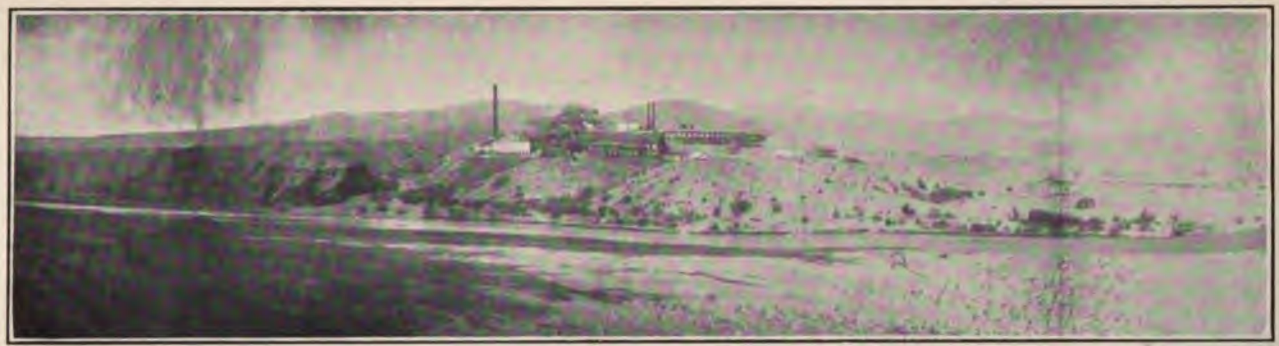
The Shannon Copper Company was organized in 1899 to acquire certain mining properties then owned by C. M. Shannon and others at Clifton, Ariz. It has a capital stock of $3,000,000, divided into 300,000 shares of a par value of $10.

The mining property of the company consists of forty-three claims, over 600 acres in area, one block of which is 4,300 feet in width, located at Metcalf, seven miles north of Clifton, Ariz., the terminus of the Arizona & New Mexico Railroad, and adjacent to the producing properties of the Arizona Copper Company, and near the Detroit Copper Company's mines.

The development consists of about five miles of tunnels, cross cuts, drifts, winzes and upraises, of which not less than two miles of workings are in pay ore.

The various workings are connected with an incline tram, which delivers ore by gravity to the railroad at Metcalf, where it is transported seven miles to their smelter at Clifton, where the company owns several hundred acres of land on the San Francisco River, which furnishes abundant water at all seasons for the purposes of smelting and concentrating.

The reduction plant consists of two 250-ton water-jacket blast furnaces, one of which was in operation in the latter part of 1902, making over 2,000,000 pounds of fine copper, and a 500-ton concentrator, built in two sections of 250



SHANNON COPPER COMPANY'S SMELTING PLANT, ARIZONA.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

tons each, the first section of which has just been completed. This gives the plant a capacity of about 1,000,000 pounds of fine copper per month.

The buildings are of steel, and the arrangement of the plant is in every respect most favorable for economic working. The concentrating plant was started last spring and is working finely. The smelting plant was also started April 7, 1903, and since then the company has been producing about 20 tons of fine copper per day and employing about 450 hands.

The officers are:

GEO. C. GILL, *President.*
JAS. W. HAZEN, *Treasurer.*
Main Office, No. 10 Postoffice Square, Boston.

The following financial statement was submitted by the directors of the Shannon Copper Company for the year ending August 31, 1902:

Assets and Liabilities.

Assets.

Treasury stock	$18,570.00	
Mining properties	2,586,672.30	
Mine development and smelter construction	654,678.23	
Accounts receivable	7,218.17	
Furniture and fixtures at Boston	829.63	
Supplies at Clifton	47,708.49	
Cash and copper	285,041.54	
Balance	20,818.70	
		$3,621,537.06

Liabilities.

Capital stock	$3,000,000.00	
Bonded indebtedness	600,000.00	
Accounts payable	21,537.06	
		$3,621,537.06

METAL PRODUCTION OF MONTANA IN 1902.

During the calendar year of 1902 Montana produced metals of the value of $46,961,167.61. This is shown by the official returns issued from the United States Assay Office in Helena, Mont., the gold and silver being computed at their coinage rate, and the copper and lead at the year's average price:

1902.

Description.	Quantity.	Value.
Gold, fine ounces	212,854.623	$4,400,095.56
Silver, fine ounces, coining rate	13,629,736.80	17,622,285.96
Copper, fine pounds, at $11.626 per cwt.	211,646,640	24,606,038.37
Lead, fine pounds, $4.069 per cwt.	8,177,629	332,747.27
Total		$46,961,167.16

These metals and their values, compared with the corresponding data for the previous year, show the following changes:

	1901.		1902.		
Metals.	Quantity.	Value.	Quantity.	Value.	Decrease.
*Gold	232,331	$4,802,717	212,854	$4,400,095	$402,622
†Silver	14,180,545	18,334,442	13,629,737	17,622,286	712,156
‡Copper	228,031,503	36,751,837	211,646,640	24,606,038	12,145,799
‡Lead	11,504,892	498,622	8,177,629	332,748	165,874
Totals		$60,387,618		$46,961,167	$13,426,451

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* Fine ounces. † Fine ounces, coining rate. ‡ Fine pounds.

The average price of copper for the year 1901 was $16.117 per cwt., and for the year 1902 $11.626 per cwt. The average price of lead for 1901 was $4.334 per cwt., and for the year 1902 $4.069 per cwt. The falling in these two metals is considerably over $12,000,000.

DETROIT COPPER MINING COMPANY OF ARIZONA.

This company produced in the year 1902 a total of 18,721,411 pounds of fine copper, and for the first six months of 1903 the output in black copper amounted to 8,506,400 pounds.

The mines of this company are situated at Morenci, Ariz., and are controlled by Phelps, Dodge & Co. The property is a very valuable one, and ranks fourth as regards size of production among the Arizona copper mines. The mines were turning out an average of 600 tons of ore daily. The property has been in active operation for more than twenty-two years, and last year made the largest production on record.

The production of the Detroit Company for the past twelve years was as follows:

Year.	Pounds fine.	Year.	Pounds fine.
1891	4,194.672	1897	8.405.138
1892	1,918.594	1898	11.428.992
1893	4.492.728	1899	13.906.253
1894	5.777.744	1900	10.749.258
1895	3.790,128	1901	17.535.000
1896	7.016.348	1902	18,721,411

Officers of the Detroit Copper Mining Company of Arizona are:

J. DOUGLAS, *President.*
G. NOTMAN, *Secretary and Treasurer.*
Office, 99 John Street, New York.

The total production of the Detroit Copper Mining Company of Arizona during the four months of July, August, September and October, 1903, in black copper 99% fine was 5,521,800 pounds.

PRODUCTION OF GOLD, SILVER AND COPPER IN ARIZONA.

The following table gives the production of gold, silver and copper in Arizona for the years named, as per Government returns:

Year 1902.

	Quantity.	Value.
Gold, fine ounces	201,240	$4,155,039
Silver, fine ounces	3,170,000	*1,680,100
Copper, pounds	121,085,896	———

Year 1901.

	Quantity.	Value.
Gold, fine ounces	197,515	$4,083,000
Silver, fine ounces	2,812,400	*1,687,440
Copper, pounds	130,778,611	———

Year 1900.

	Quantity.	Value.
Gold, fine ounces	202.856	$4,193,400
Silver, fine ounces	2,995,500	*1,857,210
Copper, pounds	118,317,764	———

Year 1899.

	Quantity.	Value.
Gold, fine ounces	124,133	$2,566,100
Silver, fine ounces	1,578.300	†2,040,630
Copper, pounds	133.054 860	———

* Commercial value. † Coining value.

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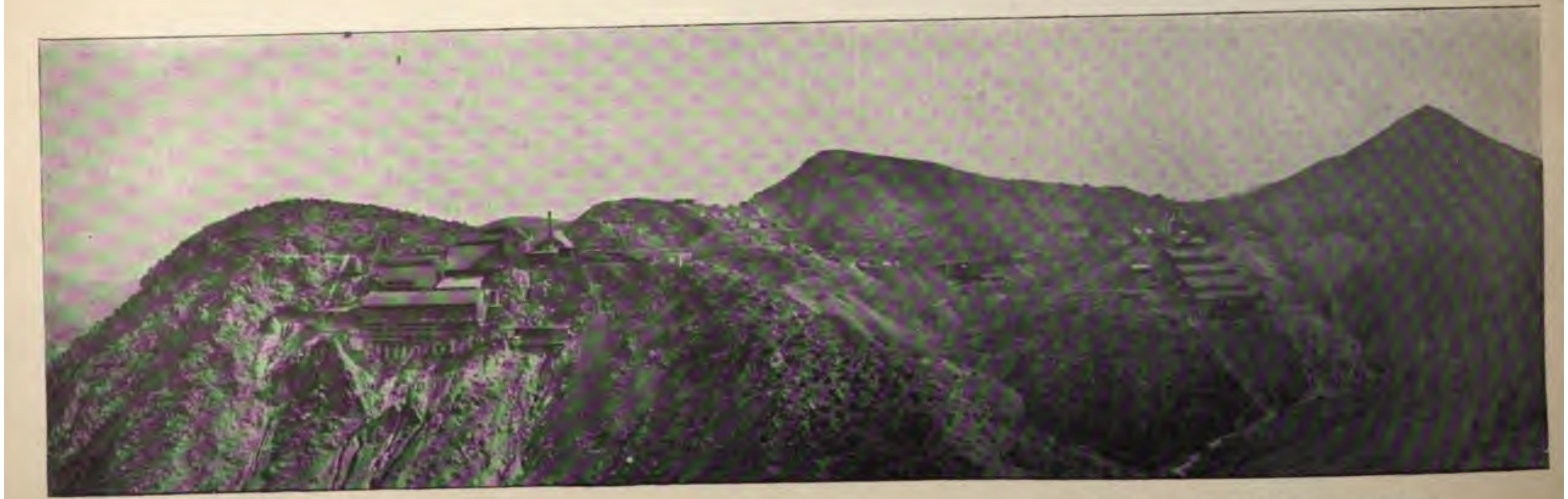


ARIZONA COPPER COMPANY'S CONCENTRATOR.

DETROIT COPPER COMPANY'S CONCENTRATOR.

ARIZONA COPPER COMPANY, LIMITED.

This company is one of the largest producers of copper in Arizona, and also one of the most successful. During the year ending September 30, 1902, the copper production was 30,000,000 pounds, against 19,898,000 pounds for the year ending September 30, 1901, and 18,516,000 pounds for the year ending September 30, 1900.

The total surplus on September 30, 1902, amounted to £196,348 2s. 7d. Out of this surplus dividends on the preferred ordinary and deferred ordinary shares were declared for the year to September 30, 1902, of 9s. 6d. per share, which absorbed £180,487 13s. To account of these dividends 4s. per share was paid July 30, 1902, and 5s. 6d. per share February 25, 1903. The free profits for the fiscal year were £246,469 3s 4d. There was carried to reserve account from these profits the sum of £40,000 to provide for redemption of debt and contingencies.

The Arizona Copper Company, Limited, is a Scotch company, with headquarters at Edinburgh, and operates the Arizona Copper Company of Arizona and the Arizona and New Mexico Railway Company. The following statement shows the shareholders' capital:

1. "A" preference shares—160,000 shares of 5s. each, all uncalled		£40,000 0 0
Whereof paid in advance of calls		£7,480 10 0
2. Preference stock	£320,000 0 0	
Of which issued and fully paid		316,530 0 0

3. Preferred ordinary shares—320,000 shares of £1 each	£320,000 0 0	
Of which issued and fully paid		316,530 0 0
4. Deferred ordinary shares—75,000 shares of £1 each	£75,000 0 0	
Of which issued and fully paid.	£32,000 0 0	
Issued in terms of circular of July 16. 1901: 31,444 shares fully paid	31,444 0 0	
		63,444 0 0
		£703,984 10 0

The company made extensive and important improvements during the past two years ending September 30, 1902, the outlay on new works and on extensions and improvements on the copper company's plant, etc., aggregating for the period named £192,595 19s. 6d. A new smelting plant was completed on September 11, 1901, and smelting operations commenced on the day following. The smelter building proper is a handsome steel building, roofed with slate. The feed floor is composed of cast iron plates supported by steel beams. There are five water-jacketed furnaces, 20 feet by 39 inches at the tuyeres, and are said to be probably the largest of their kind ever built. They were designed by the management, and their capacity is much greater than was expected. Two of these furnaces are capable of producing 900 tons or more of copper per month from the Clifton ores.

The furnace stacks are built of steel and lined with brick, They are rectangular in shape, with dimensions of 28 by 8 feet, and 50 feet in height. The gases are conducted to the main flue by a "down-comer" pipe, 6 feet in diameter, of steel, connected at the top of each stack. There are automatic discharge gates fitted to the main flue, which is connected to a steel flue dust chamber, 60 x 30 x 20 feet. The gases pass through this dust chamber to a tunnel 480 feet in length, and thence through a perpendicular shaft 300 feet in height the fumes are scattered into the air. The company has been enlarging and improving its Bessemer plant recently, and the plant has now a capacity equal to the treatment of about 14,000 tons of copper per annum.

The Arizona Company has five concentrators. No. 5 concentrator was erected in 1901, and its capacity is 6,000 tons of ore per month. It is built on the precipitous face of the Longfellow Mountain. The company operates a group of some 15 mines, and the property is considered one of the best in Arizona. The output of ore from the mines is in the neighborhood of 1,200 tons per day, and during a part of last year the yield of ore was 3.4 per cent. It is expected that the production will be maintained at the present level. The Longfellow mines are supplied with 300,000 gallons of water per day, pumping against an elevation of about 1,600 feet. The recent changes have given the Arizona Company new and improved metallurgical works, and improved and extended railroad facilities. There are immense reserves of ore to draw from of usual grade, besides very large bodies of low grade ore, which will be available when improved methods of treatment are discovered to make them profitable. The quantity of ore treated during the six months ending September 30, 1902, was 221,386 tons, of which 195,849 tons, or 88.46 per cent, were concentrating ores. During the same period 54,489 47-1,000 tons of copper ore and concentrates and

1,635,209 pounds of copper derived from leacher were smelted, resulting in a gross yield of 15,049,065 pounds of copper for the six months named.

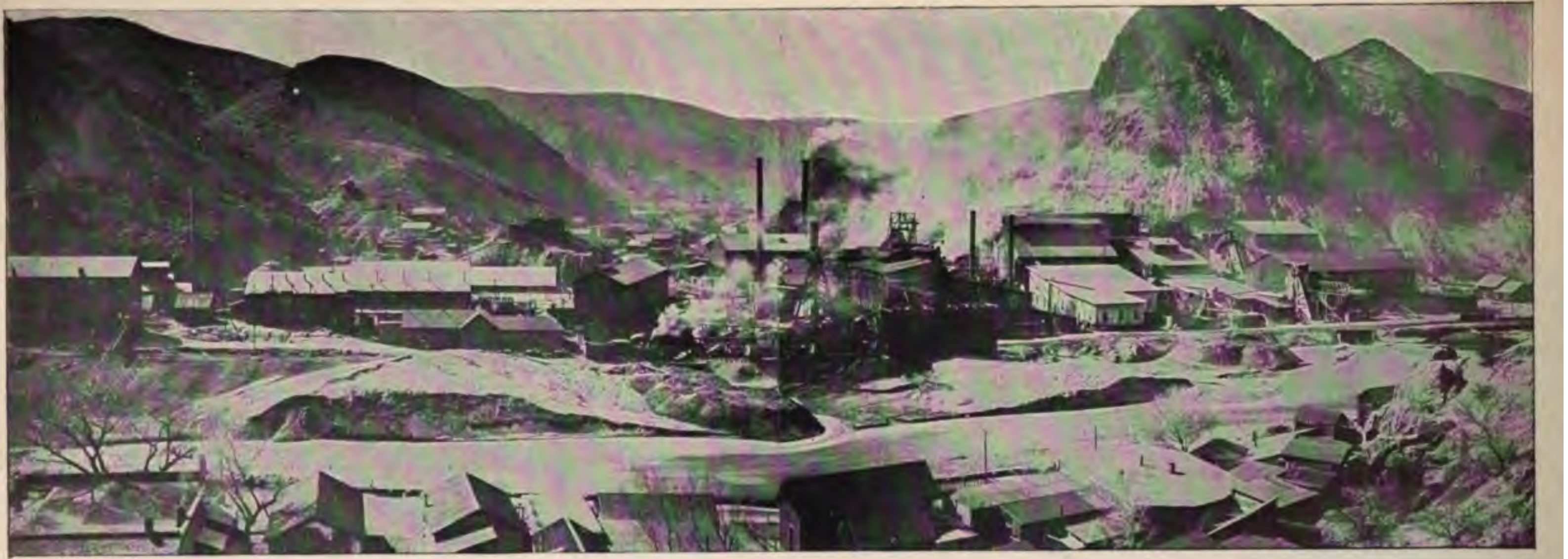
The company has lately turned a monthly copper production of 2,676,000 pounds, which was the output in May, 1903. The August, 1903, output was 2,600,000 pounds of copper.

The production at the mines and smelter for the month of September, 1903, was reported at 2,258,000 pounds of copper.

The Directors of the Arizona Copper Company, Limited, are as follows:

WM. JOHN MENZIES, W. S., *Chairman.*
PATRICK DICKSON,
JOHN GILL, S. S. C.,
J. BALD HARVEY,
J. G. HOPKINS.
ALEX. McNAB,
EDW. T. SALVESEN,
J. DUNCAN SMITH, S. S. C.,
JOHN WILSON.
WM. EXLEY MILLER, *Secretary.*
JAMES COLQUHOUN, *General Manager at Clifton, Ariz.*

Registered Office, 29 St. Andrew Square, Edinburgh, Scotland.



ARIZONA COPPER COMPANY'S SMELTING PLANT, CLIFTON, ARIZONA.

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TRINITY COPPER COMPANY.

The property of the Trinity Copper Company is situated near Kennett, Shasta County, California, the mine being within five miles of the main line of the Southern Pacific Railroad and the smelter site within one mile, which will be connected directly with the Southern Pacific.

The holdings of the company consist of nearly 6,000 acres of land, the greater part of which are mineral lands, the remainder being used for smelter sites, town sites, etc.

The property is in charge of Mr. Austin H. Brown, who is general manager of the company.

The possessions of the company are all patented.

The property is thoroughly equipped with air compressor, power drills, diamond drills, assay office; also office building located at Kennett, mess house, hospital building, store house, and, all told, there are 22 buildings situated on the possessions of the company.

The underground workings consist of about 8,000 feet of tunnels, upraises, drifts, etc., and enough ore blocked out and in sight to operate the contemplated smelter for a great many years to come. This year they have opened in one of their drifts one of the largest and highest grade sulphide ore bodies that has been encountered on the property.

The Trinity Copper Company was incorporated October 18, 1900, under the laws of the State of New Jersey, with an authorized capital of $6,000,000, divided into 240,000 shares of the par value of $25 each. The stock of the company was listed on the Boston Stock Exchange March 7, 1901. Amount of shares listed was 160,000 and 80,000 shares are held in the treasury for the benefit of the company.

The annual report for 1902 states that $47,453 was expended in opening work aggregating 1,551 feet, and that 300,000 tons of ore were added to the amount in sight, making the total reserves 800,000 tons. A total of less than $66,000 was spent by the company last year. The mine is under expert management, and operations carried on in an able and economical manner. The policy seems to be to develop large openings before starting smelting.

The officers of the Company are:

THOMAS W. LAWSON, *President.*
ALLEN ARNOLD, *Treasurer.*

Office, 33 State Street, Boston.

ALLOUEZ MINING COMPANY.

Recent operations at the Allouez mine have been conducted on the conglomerate lode, where the old openings have been unwatered, and No. 2 shaft sunk from the eighteenth level to 130 feet below. At that point a plat was cut and 285 feet of drifts opened to the north and south during the past year. It is thought that the character of the ground found will pay to mine, and that drifts can be extended south of No. 1 shaft for a distance of from 1,000 feet to 3,000 feet within the territory owned by the Allouez.

It has been decided to sink a shaft near the eastern boundary of the company's property to cut the Kearsarge lode, and the necessary machinery and supplies for doing so have been ordered. The success of the Wolverine, Mohawk, Centennial and the Kearsarge Branch of the Osceola group of mines has furnished abundant proof of the strong and valuable character of the Kearsarge lode wherever opened. As there are 600 acres of the Allouez property carrying the underlie of the Kearsarge vein there is encouragement to expect that the Allouez has a chance of finding some good pay ground on the same lode which other mines have found so profitable. The new developments at the Allouez mine and sinking on the Kearsarge lode will be watched with interest.

In October, 1901, the company called an assessment of $3 per share, which enabled them to pay off the floating indebtedness and secure 120 acres of land on which they held an option. In 1901 the 20,000 shares of treasury stock was distributed to stockholders in the proportion of one share for every four shares held and owned by them. The old stock was, therefore, called in and new stock issued in lieu thereof upon the present capitalization. Each stockholder received five shares of new stock for every four shares of the old issue.

Allouez Mining Company.
Treasurer's Statement.
December 31, 1902.

Receipts.

To cash on hand January 1, 1902				$113,371.91
" Assessment account			$5,735.00	
" Interest			3,532.15	
" Rent of dwellings			3,743.70	
" Rent of stamp mill			2,601.90	
" Bills receivable, 1901			677.76	
				16,290.51
				$129,662.42

Expenditures.

By mining expenses, including labor and material			$39,018.37	
" General expense			8,169.80	
" Machinery and equipment			2,143.37	
" Fuel and supplies			2,928.00	
" Insurance			812.06	
" Taxes			2,376.49	
" All other expenses			2,893.93	
" Bills payable, 1901			1,507.22	
			$59,840.24	
Cash on hand January 1, 1903		$71,335.60		
Bills payable at mine Dec. 31, 1902	$1,606.05			
Less bills receivable at mine Dec. 31, 1902.	$3.63			
		1,522.42		
			69,813.18	
				$129,662.42

The capital stock of the Allouez Mining Company is $2,500,000, divided into 100,000 shares of $25 each.

Officers of the Company are:

H. F. FAY, *President*,
GEO. G. ENDICOTT, *Secretary and Treasurer.*

Directors:

H. F. FAY,
JOHN C. WATSON,
STEPHEN R. DOW,
W. B. MOSMAN,
W. L. FROST.
GEO. G. ENDICOTT.
HERBERT A. TUCKER,
GODFREY MORSE,
JAMES CHYNOWETH.

Office, 60 State Street, Boston.

At a meeting of the Allouez directors held May 21, 1903, it was voted to call a special meeting of the stockholders for the purpose of authorizing an exchange of land with the Ahmeek Mining Company, the total acreage of which will be about eleven acres. This action was brought about by agreement arrived at by the representatives of the two companies at a recent meeting. The exchange is very favorable to both companies, as it will permit of a deeper shaft being sunk by the Ahmeek Company and longer upper levels for Allouez.

COPPER MARKET REVIEW FOR THE YEA 1900.

A brief retrospect of the past year's operations in copper recalls the remarkable permanent demand which governed the market for this metal throughout the period under review. Demand from the world's centres of consumption was enormous, and consequently the transactions were in immense volume; thereby making 1900 another memorable year for the copper trade. The commercial importance and value of copper has developed with wonderful rapidity, and the future will undoubtedly record not only new sources of production, but also new distributive channels, capable of absorbing supplies at a rate hitherto unequalled. The most essential factor in the copper situation has been the continuous foreign demand which was of unparalleled magnitude last year. The United States copper production in 1900 increased only about 3.2 per cent. over that for the preceding year whereas the exports of copper from this country were 32.8 per cent. larger last year than in 1899. The United States shipments of copper to foreign countries last year were equivalent to 58.8 per cent. of the domestic production.

January opened with a quiet market at 16½ cents for Lake copper. Prices held fairly steady until near the close of the month, when values dropped to 16¼ cents Europe bought quite freely, but domestic trade was dull Early in February 16¼ cents was the nominal price, but shortly after the Calumet and Hecla consummated large sales at 16 cents with both home and foreign consumers. Subsequently business was done at 16¼ cents. The market, having regained its position, continued on the basis of 16¼ cents. March came in firm at 16¼ cents, and gradually developed strength and activity. Values showed a steady upward tendency during the first half of March, and after advancing to 16½ cents soon reached 16¾ cents. An eager demand sent prices to 17 cents before the month of March was out. There was scarcely any fluctuation in the market during the month of April, and prices ruled steady at 17@17¼ cents. There was a large business, with deliveries running up to July. Business was quiet in May, and values steadily receded from 17¼ cents to 16½ cents. June opened at 16½ cents, but during the last half of the month declined to 16¼ cents. In July there was further loss of tone to the market, with Lake copper selling down to 16⅛ cents. About the middle of the month prices hardened, and sales occurred at 16⅜ cents. At the close the market was 16½ cents. August was characterized by firmness, and after opening at 16½ cents advanced to 16¾ cents. Sales were made at both these prices. The general tendency was firm in September, and values ranged from 16¾@16⅞ cents. October remained very steady on the basis of 16¾@16⅞ cents. The market in November opened at 16¾ cents, and after the Presidential election developed a stronger tone. Sales were made at 16¾, 16⅞ and 17 cents. Large quantities of copper were sold. December ruled quiet all month, with the market quoting 17 cents. A limited quantity was sold at a little below these figures, but while the tone as a whole was steady there was not much activity to the market.

COPPER MARKET REVIEW FOR THE YEAR 1899.

The year 1899 was one of unprecedented prosperity in copper circles. United States copper production and consumption were both the largest on record. The copper mining companies of this country declared dividends in 1899 amounting to more than $26,000,000, and the activity at the copper mining centres had no parallel, while the aggregate quantity of copper entering into domestic manufactured goods was of greater volume than ever before. Favorable features were in the ascendant, and remarkable developments and expansion kept steadily to the front. January opened with Lake copper strong at 13¼, and by a series of rapid advances reached 17 before the month closed. Spot copper was scarce, and consumers were importuning early deliveries. Early in February the market was highly sensitive, and jumped from 17 to 18 in the first two days of the month. Before the first half of February had passed spring deliveries sold at 18½, but later the market reacted to 18. March opened at 18, but soon developed an easier tone, which brought down prices to 17¼. At the end of the month the entire loss was recovered and March closed with Lake strong at 18. During the month of April the market reached the maximum, with sales at 19¼. The fluctuations recorded in April were represented by the quotations of 18¼ and 19¼. May came in quiet at 19⅛@19¼, and on pronounced dullness prices declined to 18¼@18½. Spot copper commanded a premium over futures. Early in June the market was 18½ for spot and 18 for futures. During the month Lake sold at 17⅞, but at the close was quoting 18¼@18½. Electrolytic was selling about a cent or more per pound under Lake. July was a very steady month, with Lake 18¼@18½. There was a strong market when August came in at 18½, after which prices advanced nominally to 18¾@19, but continued selling by a leading interest at 18½ forced the market to keep that level. The tone was steady in September at 18⅜@18½. Although October opened at 18⅜@18½, the tendency was a sagging one, and the month ended with Lake at 17@17¼. November settled down to dull routine after large sales by the Calumet & Hecla at 17 cents, with deliveries into February, 1900. The market kept close to 17@17¼ throughout the month. December was also quiet, and after opening at 17@17¼, declined to 16¼@16½ on light business.

COPPER STATISTICS FOR THE YEAR 1900.

Price of Lake Ingot Copper.

1900. Month.	Highest. Cents per lb.	Lowest. Cents per lb.
January	16½	16¼
February	16½	16
March	17	16¼
April	17¼	17
May	17¼	16½
June	16½	16¼
July	16½	16⅛
August	16¾	16½
September	16⅞	16¾
October	16⅞	16¾
November	17	16¾
December	17	16¾
Year	17¼	16

Price of Spot "Standard" Copper in London.

1900. Month.	Highest. £ per ton.	Lowest. £ per ton.	Sales reported. Tons.
January	71 12 6	69 2 6	13,625
February	75 0 0	71 15 0	13,250
March	79 10 0	75 0 0	14,325
April	79 2 6	75 17 6	10,500
May	76 10 0	71 12 6	16,000
June	72 10 0	70 17 6	10,825
July	73 10 0	71 2 6	10,500
August	74 8 9	72 7 6	10,225
September	73 17 6	72 11 3	9,300
October	72 17 6	71 5 0	9,975
November	73 0 0	71 12 6	9,100
December	72 17 6	71 0 0	6,700
Year	79 10 0	69 2 6	134,325

European Copper Supplies and Deliveries for Year 1900.

1900. Month.	Total supplies. Tons.	Total deliveries. Tons.
January	19,267	20,282
February	23,272	21,117
March	25,421	23,071
April	27,155	23,413
May	25,240	22,836
June	26,870	25,836
July	21,226	21,201
August	26,940	25,678
September	19.521	20,563
October	22,703	23,024
November	23,488	23,078
December	19,300	19,600
Year	280,403	269,699

Total Visible Supply of Copper in England and France and Afloat Thereto from Chili and Australia.

1900. Date.	Tons of 2,240 lbs.	Price of cash standard copper. £ per ton.
January 1	22,817	70 0 0
February 1	21,327	71 15 0
March 1	22,982	75 2 6
April 1	24,632	78 10 0
May 1	27,475	76 10 0
June 1	29,204	72 10 0
July 1	29,263	71 15 0
August 1	28,913	74 0 0
September 1	30,175	72 17 6
October 1	29,133	72 7 6
November 1	28,812	71 18 9
December 1	29,220	72 12 6
Jan. 1, 1901	28,860	72 17 6

WINONA COPPER COMPANY.

The present Winona Copper Company was organized in November, 1898, under the laws of the State of Michigan, with a capital stock of $2,500,000, divided into 100,000 shares of $25 each. Since then exploration and development work have been prosecuted with varying results.

During the year 1902 work in the mine was confined to drifting and crosscutting and the preparation of stopes from which a stamping test of the rock could be made. The following report covers operations during the year 1902:

Receipts.

On account of Assessment No. 1		$90,744.00
From sales of copper (101,188 pounds at 12⅞ cents)		13,027.96
		$103,771.96

Expenditures.

Expended at mine	$48,059.11	
Expenses of Boston Transfer Office, registration of stock, salaries and general expenses	5,410.93	
Smelting, freight and brokerage	1,415.97	
Interest on loans	175.58	
		55,061.59
Balance of receipts		$48,710.37
The deficiency December 31, 1901, was		9,617.13
Balance on hand December 31, 1902		$39,093.24

The company made arrangements to have a mill test, and one of the Atlantic Mining Company's heads was set to stamping rock from the Winona mine in December, 1902. The following are the results of the stamping test:

Month.	Tons stamped.	Mineral obtained.	Pounds per ton.	% fine copper.	Pounds fine copper.	Pounds per ton
Dec., 1902...	3.772	142,754	37.8	63.24	90,276	23.9
Jan., 1903...	5,023	166,714	33.1	66.80	111,370	22.2
Feb., 1903...	4.100	126.676	30.9	62.32	79,941	19.5
	12,895	436.144	33.8	64.56	281,587	
Dec. and Jan. Mass, 51.904 lbs. at 38%..............					19,752	
Total fine copper..............................					301,339	= 23.36

The mine agent states that the copper occurs associated generally with slips running at various directions with the general strike of the vein. In the fourth level stope the width has reached in places 40 feet. The copper ground is more or less bunchy and separated by bars of barren vein or trap. This fact has led to the "filling method" in working the stopes, by which method the stopes are filled with the barren rock instead of hoisting the entire rock blasted indiscriminately. Recent developments at the Winona indicate that the lower part of the mine is the best, and at the sixth level there was a considerable showing of copper. The south end of the property is the most promising, and the prospects for developing a successful mine have lately been more encouraging.

Operations are carried on principally at No. 2 shaft of late. This shaft is down to the sixth level, and at this depth drifting has been extended 785.5 feet south, also a cross cut east for 350 feet to the conglomerate underlying the Winona lode. No. 1 shaft is down to the fourth level. There was no shaft sinking done in 1902. The discovery of the Winona lode was at a point in the vicinity of No. 1 shaft, and previous to 1900 the work centred there for the most part, but since then work has been concentrated at

No. 2 shaft. The two shafts are connected at the second level, by which means better ventilation is secured.

There is an exploring shaft, known as No. 3, located about 1,500 feet south of No. 2, which is less than 100 feet in depth. As the ground can be explored by long drifts from No. 2 shaft, further sinking of No. 3 was discontinued in the year 1900. At the end of last year there were about 5,200 tons of carefully selected rock in the stock pile at No. 2 shaft. A spur of the Copper Range Railway has been built up to the shaft. The length of this spur is 3,600 feet. A new 18 x 24 rock breaker has been set up where it delivers the crushed rock direct into the cars.

An assessment of $1 per share ($100,000) was called, and made payable March 12, 1903.

Assets and Liabilities.
Winona Copper Company.
December 31, 1902.

Assets.		
Cash		**$28,670.16**
Copper on hand, sold		**13,027.96**
Supplies and cash at mine		**8,114.01**
		$49,812.13
Liabilities.		
Indebtedness at mine	**$9,304.00**	
Accounts payable	**1,414.89**	
		10,718.89
Balance of assets December 31, 1902		**$39,093.24**

Officers of the Winona Copper Company are:

JOHN STANTON, *President.*
J. R. STANTON, *Treasurer.*
J. W. HARDLEY, *Secretary.*

The production of the Winona Copper Company for the months named was as follows:

1903.	**Refined Copper.**
January	120,210 lbs.
February	78,941 "
March	97,344 "
April	140,153 "
May	125,240 "
June	116,821 "
July	61,456 "

The new No. 3 shaft has been opened to the fourth level in October, 1903, and will be sunk to the sixth level, it is thought, this year.

Directors:

JOHN STANTON, JOSEPH E. GAY,
WM. A. PAINE, J. R. STANTON,
JAMES H. SEAGER.

Transfer Agent, American Loan and Trust Company, 53 State Street, Boston.

Registrar, Boston Safe Deposit and Trust Company, 87 Milk Street, Boston.

Office, 15 William Street, New York.

The annual meeting of stockholders is held on the last Tuesday in March in each year.

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AFT HOUSE, MOHAWK MINE.

MOHAWK COAL DERRICKS.

SHAFT HOUSE, ADVENTURE MINE.

BOILER PLANT, BALTIC MILL.

LAKE SUPERIOR COPPER PRODUCTION.

As per compilation of the United States Geological Survey, the production of Lake Superior copper was as follows:

Year.	Pounds.
1887	76,028,697
1888	86,472,034
1889	88,175,675
1890	101,410,277
1891	114,222,709
1892	123,198,460
1893	112,605,078
1894	114,308,870
1895	129,330,749
1896	143,524,069
1897	145,282,059
1898	158,491,703
1899	147,400,338
1900	145,461,498
1901	156,289,481
1902	170,609,228

SANTA FE GOLD AND COPPER MINING COMPANY.

This property did not produce any copper during the year 1902, as the low price of copper ruling throughout the year prevented the carrying on of smelting operations except at a considerable loss. Under those circumstances the management deemed it advisable to confine the work during the first ten months of 1902 to the development of the principal ore body and to prospecting for undiscovered deposits. During the past year the mine has been put in excellent physical condition, and large additions have been made to the ore reserves. According to the estimates of the late superintendent of the company, which are confirmed by Mr. Channing, Consulting Engineer, there are now about 40,000 tons of ore in sight. This tonnage is virtually blocked and so developed that the ore may be extracted at any future time at a minimum cost of mining.

The prospecting work carried on during the year 1902 did not result so favorably, as no discoveries of any importance have been made. The character of the formation is such, however, that, notwithstanding the large amount of exploratory work that has been done, it is officially reported that it cannot be positively affirmed that there are not other valuable ore bodies in the Santa Fe property which remain to be discovered, but further prospecting was postponed until such time as it will again become profitable to extract and treat the ore already developed. The property is now in charge of a caretaker, and the management state that every effort is being made to keep expenses down to the lowest possible point.

The following work was done during the year ending December 31, 1902:

465 feet of development work in the main ore body, consisting of drifts and cross-cuts.

In the course of prospecting:

Drifts and cross-cuts	**838 feet**
Winzes and raises	**194 feet**
Prospecting with the Diamond drill	**543 feet**

The company has also filed on certain coal lands showing a good seam of coal at the surface. These lands were recently being explored by the diamond drill. If results of the drilling come up to expectation the land will be purchased from the Government. The coal in question is of a fair coking quality, and if it is found in sufficient quantity these lands will prove a valuable acquisition to the Santa Fe.

The future prosperity of the company depends principally, of course, upon the price of copper. The demand for copper has lately increased, and there is reason to believe that the price of the metal will be maintained at a permanently higher level than in 1902.

Of nearly equal importance is the matter of the company's ability to reduce the cost of production. This will depend, first, upon improvements in the metallurgical treatment of the ore.

The president states that on account of the exhaustion of the bodies of pyrite in the mine, which proved of great value for fluxing purposes in the early part of the campaign of 1901, it is evident that in order to treat the ore economically and to reduce losses it will be necessary to resort to some system of concentration. Experiments with water concentration did not prove successful. It is believed that the ore can be successfully treated by one or other of the approved methods of magnetic concentration. The directors were understood to be in favor, before any steps are taken to change the present plant, of making a series of experiments with the ore to determine the best method of treating it. Fortunately there is sufficient money in the treasury to make any alterations in the plant that may be determined on as a result of the experiments referred to.

The company also hope that further economies will result from a reduction of transportation costs. The completion of the Santa Fe Central Railroad will materially reduce the length of the wagon haul, and if the other conditions referred to warrant the company in resuming operations, there is reason for hoping that the railroad company can be induced to build a spur to the mines. In fact, negotiations having this object in view were entered into, but were suspended on account of the depressed state of the copper market which existed last year.

The following was the treasurer's report, made January 27, 1903, for the year 1902:

Receipts and Expenditures.

Santa Fe Gold and Copper Mining Company.

Cash on deposit January 1, 1902		$146,038.63
Receipts.		
Interest	$13,618.32	
Store commissions	4,751.52	
Sale of product	56,798.42	
Rebate and sales of sundry equipment	969.05	
Accounts receivable	783.78	
		$76,921.09

Disbursements.			
Remittances to San Pedro office			$57,943.93
Salaries and general expenses, New York office			3,809.59
Consulting Engineer			1,150.00
New Jersey office			236.40
Insurance account (plant in San Pedro)			913.59
Directors' fees			60.00
Registration and transfer of stock			930.00
Assaying, New York			72.00
New Jersey taxes			2,500.00
New York taxes			116.41
Sampling, weighing, etc			389.13
Tolls for refining			439.62
Commissions on matte shipments			1,873.47
Freight on matte shipments			2,925.64
Assets.			
Accounts receivable	$30.10		
Cash at bank and bankers	149,569.84		
			149,599.94
		$222,959.72	$222,959.72

Available Assets—Approximate.

Cash and accounts receivable	$149,599.94	
Value of material at refining works, estimated	6,659.60	
		$156,259.54

The Santa Fe Gold and Copper Company was organized, under the laws of the State of New Jersey, January 21, 1899, with a capital stock of $2,500,000, divided into 250,000 shares of $10 each. The company built a new smelter a few years ago, and if some way can be discovered to treat the immense bodies of ore at a cost low enough to permit steady production on a large scale the mine may yet be profitably operated.

The officers of the Company are:

J. H. SUSMANN, *President.*
EDGAR BUFFUM, *Secretary and Treasurer.*

Directors:

J. H. SUSMANN,
C. S. HENRY,
EDGAR BUFFUM,
J. DE SMET MAGUIRE,
E. C. WESTERVELT,
E. H. WESTLAKE,
A. S. BIGELOW,
W. A. S. CHRIMES,
O. B. VAN SANT.

Office, 11 Broadway, New York.

PRODUCTION OF COPPER IN MONTANA.

PER GOVERNMENT RETURNS.

The State of Montana continues to be the largest copper-producing district in the world. The Butte mines turn out an enormous amount of copper each year, and development work being done at the various properties there gives promise for a large output in the future.

Year.	Pounds fine.
1882	9,058,284
1883	24,664,346
1884	43,093,054
1885	67,797,864
1886	57,611,621
1887	78,699,677
1888	97,897,968
1889	98,222,444
1890	112,980,896
1891	112,063,320
1892	163,206,128
1893	155,209,133
1894	183,072,756
1895	190,172,150
1896	232,096,483
1897	237,158,540
1898	216,979,334
1899	245,602,314
1900	245,998,365
1901	228,031,503
1902	*211,646,640

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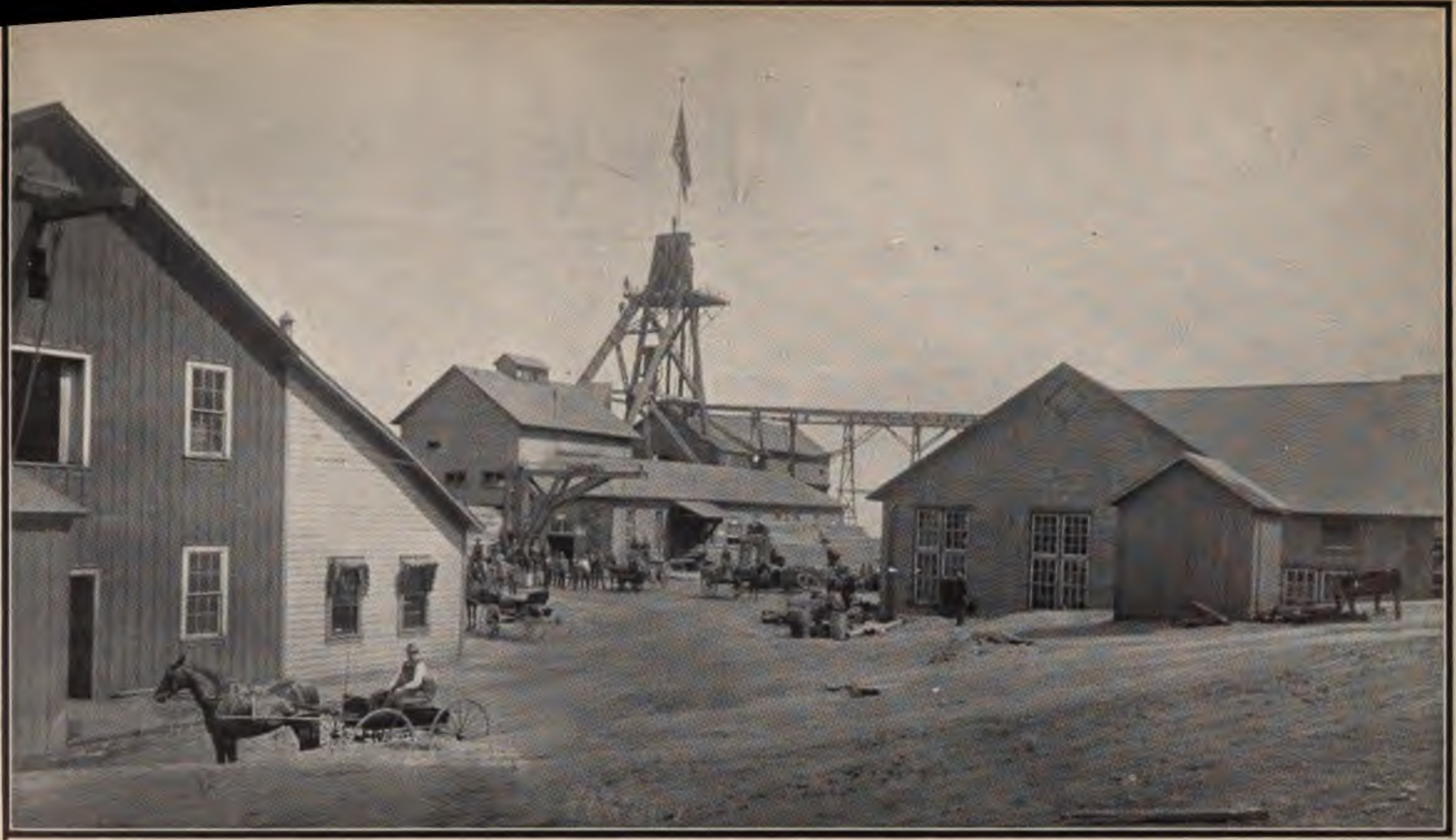
* United States Geological Survey returns give 269,707,024 pounds for 1902.



LEONARD MINE OF THE BOSTON AND MONTANA COMPANY, BUTTE.

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PRODUCTION OF COPPER, INCLUDING PRECIOUS METALS, IN MICHIGAN.

PER RETURNS.

	Year 1902.	Year 1901.	Year 1900.
Gold, fine ounces	———	1,490	1,403
Silver, fine ounces	110,844	81,000	102,000
Copper, pounds	169,616,614	147,189,606	144,227,340

	Year 1899.	Year 1898.	Year 1897.
Gold, fine ounces	5	5	3,033
Silver, fine ounces	112,800	34,400	60,437
Copper, pounds	155,845,780	158,491,703	145,282,059

	Year 1896.	Year 1895.
Gold, fine ounces	1,800	2,075
Silver, fine ounces	59,000	37,300
Copper, pounds	143,524,069	129,330,749

PRODUCTION OF GOLD, SILVER AND COPPER IN UTAH.

PER GOVERNMENT RETURNS.

	Year 1902.	Year 1901.
Gold, fine ounces	192,157	178,513
Silver, fine ounces	12,678,037	10,760,800
Copper, pounds	23,939,901	20,116,979

	Year 1900.	Year 1899.
Gold, fine ounces	192,155	166,933
Silver, fine ounces	9,267,600	7,093,300
Copper, pounds	18,354,726	9,584,746

	Year 1898.	Year 1897.
Gold, fine ounces	114,767	83,500
Silver, fine ounces	6,570,256	6,265,600
Copper, pounds	3,750,000	3,919,010

OLD DOMINION COPPER MINING AND SMELTING COMPANY.

The Old Dominion came under the control of a new management April 2, 1902, and since then the mine has been subjected to expert examinations to determine its prospects and value. The result of these investigations furnishes additional proof to that previously existing that the property is a very valuable one, and capable of becoming a large producer.

The production of fine copper during the year ending December 31, 1902, was 7,992,550 pounds, against 10,094,787 pounds during the year 1901. The reduction in the output for 1902 was partly due to a shutdown of the mine last September, and to a curtailment of production in the early part of December, 1902, on account of the large increase in the flow of water. The quantity of ore smelted in 1902 was 68,840 tons, as compared with 81,015 tons in 1901. The total cost of production of fine copper laid down in New York and sold as pig copper for the year 1902 was 10.81 cents per pound. For the year 1901 the total cost of production, laid down in New York and sold as electrolytic copper, was 12¼ cents per pound. The cost of refining pig copper into electrolytic copper is about ¾ cent per pound.

On April 2, 1902, the floating indebtedness of the company amounted to $359,178, with interest at the rate of 5 per cent per annum. This indebtedness had been reduced to $48,811.02 on December 31, 1902, and since then the latter amount has been paid from proceeds of sales of copper.

During 1902 two new boilers, each with a capacity of 200 horse-power, were set up, also a new briquetting plant to work up the flue dust. The sinking of a new shaft is under way, to be about 6 x 26 feet, with four compartments, two for the pumps and two for hoisting ore. Extensive improvements are to be made, including the construction of a new smelter and concentrating mill. It is estimated that from $300,000 to $400,000 will be required to complete the entire improvements commenced.

The Old Dominion property is located in Globe, Arizona. The company was organized in 1895, with a capital stock of $3,750,000, divided into 150,000 shares of $25 each. Working capital was provided for by the sale of 20,000 shares of the stock at $25 per share, which gave $500,000 in cash for the treasury. In June, 1899, the company increased its capital to $5,000,000, divided into 200,000 shares of $25 each. Of this amount there have been issued 150,000 shares, full paid, at par $25 each, and 50,000 shares remain unissued in the treasury. The mine is opened to the twelfth level, and the development work done at the several levels in 1902 amounted to 5,035 feet, against 10,313 feet at same levels in 1901. The supply of ore last year came from the ninth level to the surface. Sulphide ore is found in the eleventh and twelfth levels, and a winze sunk 33 feet below the twelfth level showed high grade sulphide ore for the entire depth. The presence of rich sulphide ore in the mine will undoubtedly prove very valuable if they continue to hold out strong. The diamond drill was operated on the third and eighth levels, 588¾ feet in 1902 and 579 feet 9 inches in 1901. The consulting engineer of the company estimates the amount of ore above the twelfth level at at least 700,000 tons, half oxides and half sulphides. In addition there is in the old slag dump about 400,000 to 500,000 tons, from which it is thought about 2 per cent or more copper may be recovered, or about 10,000 tons of copper.

Summary of Results at Old Dominion Mine in 1902.

Ore mined and smelted, tons			**68,840**
Pig copper produced, pounds			**7,705,327**
Matte produced, pounds			**850,078**
Fine copper produced, pounds			**7,992,550**
Yield of fine copper in ore smelted, pounds			**116.10**
Percentage of fine copper in ore smelted			**5.80**
Cost per ton ore mined			**$5.70**
Cost per ton ore smelted			**$4.27**
Gross amount realized per pound fine copper		**11.05c.**	
Cost per pound fine copper, mining and **smelting**	**8.59c.**		
Cost per pound fine copper, handling, etc	**1.63c.**		
Total	**10.22c.**		
Cost per pound fine copper, construction, etc..	**.59c.**		
Total cost		**10.81c.**	
Net profit per pound fine copper			**24c.**

Report of Mining Operations.

*Old Dominion Copper Mining and **Smelting Company.***

For the Year Ending December 31, 1902.

There were mined and smelted 68,840 **tons of ore, from which was** produced:

7,705,327 lbs. pig copper at 95.95%.....	=	7,393,085 **lbs. fine copper**
850,078 lbs. matte at 70.52%.........	=	599,465 **lbs. fine copper**
Total production.................		7,992,550 **lbs. fine copper**

Gross sum realized for above production		**$883,378.45**
Cost of production:		
Mining expenses	$392,507.63	
Smelting expenses	293,669.82	
		$686,177.45

All expenses of handling copper:			
Transportation	$63,966.27		
Commissions	15,004.40		
Interest	19,671.92		
Taxes	3,975.00		
Legal expenses	4,125.00		
Mining engineers	6,216.11		
Salaries, rent, etc	17,600.46		
		130,559.16	
Totals			$816,736.61
Profit from production			$66,641.84
Less for construction, etc			47,174.45
Surplus for the year			$19,467.39
Balance of assets December 31, 1901		$337,206.95	
Add: Value ore on dumps, etc		100,000.00	
			437,206.95
Balance of assets December 31, 1902			$456,674.34

From July 9, 1895, to December 31, 1902, the total production of the Old Dominion mine has been as follows: 45,041,299 pounds copper, at 12.63 cents per pound, $5,688,070.94; 39,885.24 ounces silver, at 58.48 cents per ounce, $23,320.75; 507,471 ounces gold, at $20 per ounce, $10,149.42. Running expenses for same period amounted to $4,694,473.70. Cost of construction, improvement and development work took $960,572.07, and there was paid for purchase of Continental group and sundry mining claims $109,821.

Assets and Liabilities.

December 31, 1902.

Assets.

Cash in bank at Boston	$4,864.20
Accounts receivable at Boston	40,079.60
Office furniture and fixtures at Boston	728.25
Arizona 7% School bonds	7,000.00
Cash at mine	2,810.06
Fuel at mine	7,167.93
Supplies at mine	119,518.02
Accounts receivable at mine	2,317.25

Stocks on hand at Globe, Ariz.:

Copper in matte,	2,625,000 lbs.	$239,531.25	
Copper in pigs,	97,000 lbs.	10,427.50	
Copper in pile, etc.,	1,975,000 lbs.	118,267.45	
Total	4,697,000 lbs.		368,226.20
Total assets			$552,711.51

Liabilities.

Accounts payable at mine	$35,740.61	
Drafts outstanding	11,485.54	
Advances on copper over shipments	48,811.02	
Total liabilities		96,037.17
Balance of assets December 31, 1902		$456,674.34

Officers of the Old Dominion Copper Mining and Smelting Company are:

CHARLES S. SMITH, *President.*
JOSEPH T. HERRICK, *Vice-President.*
C. H. ALTMILLER, *Secretary and Treasurer.*

Directors:

CHARLES S. SMITH, JOSEPH T. HERRICK,
GEORGE NAPIER TOWLE, CHARLES G. LUND,
D. BLAKELY HOAR, EDWARD F. NEWTON,
J. WALDO SMITH.

Office, 35 Congress Street, Boston.

The annual meeting of stockholders is held on the first Wednesday in April in each year.

The President of the Old Dominion Company issued a circular to stockholders in August, 1903, stating, among other things, that more extensive improvements and a much greater expenditure are necessary than indicated by the annual report of 1902. The ore bodies in the lower levels, it is said, show ore reserves exceeding in richness and quantity estimates given by any of the experts who have previously reported on the property. A bond issue has been mentioned, or an assessment of the stockholders on themselves, to provide the funds required.

It has been decided to form a new company, called the Old Dominion Securities Company, with a capital of $750,000.

At a special meeting of stockholders of the Old Dominion Mining Company on October 10, 1903, the stockholders authorized the directors to bond the property and issue new stock.

This action will permit the directors to issue $750,000 bonds and 50,000 shares of stock to the Old Dominion Securities Company.

The Old Dominion Securities Company will agree to furnish the Old Dominion Copper Company with $750,000 in cash, for which it will receive $750,000 par value in ten-year 6 per cent bonds and 50,000 shares of Old Dominion Copper Company stock.

The Old Dominion Securities Company agrees to sell to the Old Dominion Copper Company at any time prior to January 1, 1907, at $20 per share, all or any part of the 50,000 shares.

The Old Dominion Securities Company offers to stockholders of the Old Dominion Copper Company of record October 3, 1903, the right to subscribe at par $10 for one share of stock of the Securities Company for every two shares of stock held.

Subscriptions will be payable 25 per cent October 22, 1903; 20 per cent December 15, 1903; 15 per cent January 15, 1904; 15 per cent March 15, 1904; 15 per cent May 16, 1904, and 10 per cent July 15, 1904.

Stockholders may prepay any or all of the instalments on or after October 22, and will be allowed a discount at the rate of — per cent per annum. Negotiable receipts will be issued upon payment of the first instalment, and certificates of stock will be issued upon payment of the full subscriptions.

Right to subscribe expired October 12. Application will be made to list the shares of the Old Dominion Securities Company on the Boston Stock Exchange.

Up to October 15 it was reported that about $500,000 of the total $750,000 had been subscribed, and it was thought the entire amount will be taken.

The stockholders of the Old Dominion Mining Company subscribed for about two-thirds of the stock in the Old Dominion Securities Company, but in the latter part of October, 1903, the proposition was reconsidered, and the formation of a new company was proposed. The new company is to have 350,000 shares of stock, and will represent the consolidation of the Old Dominion Mining Company and the United Globe Mines, belonging to Messrs. Phelps, Dodge & Co. Negotiations looking to the merger of the above-named properties were completed and the preliminary papers signed October 22, 1903.

Messrs. F. S. Mosely & Co., Boston, fiscal agents, issued a circular, in which they say in part:

"The stock of the Old Dominion Company is to be increased from 200,000 shares to 350,000 shares, par value $25.

"The United Globe Mines is to transfer all of its properties of every nature to the Old Dominion Company and to pay into the treasury of the latter $350,000 cash.

"The Old Dominion Company is to pay therefor 200,000 shares of its new stock, but the United Globe Mines will immediately transfer to the Old Dominion a number of shares, depending on the amount of supplies the latter company has on hand at the time of transfer, to be used as treasury stock. The number of shares to be turned into the Old Dominion's treasury for working capital will be about 65,000.

"The Old Dominion Company shall have the right to distribute among its stockholders of record of date of amalgamation all of its assets, except its mining property and other real estate, mining plant, ores and slags, machinery, tools and fixtures, used or to be used in connection with its mine, and its furniture and supplies; subject, however, to certain of its outstanding debts. It is proposed that this property should be transferred to a trustee for the stockholders or to a new corporation, and that the stockholders shall be given, in addition to their original shares of stock, negotiable certificates representing their interest in same, on surrender of the temporary receipts issued by the National Shawmut Bank, when the plan is declared operative. Application has been made to the Boston Stock Exchange to list these receipts.

"There will be three directors appointed from each company, who will appoint a seventh, with the following executive officers: Professor James Douglas, president; Charles S. Smith, vice-president, and Charles H. Altmiller, treasurer.

"We have agreed to finance the Old Dominion Company to an amount not exceeding $350,000.

"Stockholders may become a party to consolidation agreement by depositing their stock with the National Shawmut Bank, which will issue negotiable receipts therefor.

"The right to deposit stock under the above plan will expire at the close of business on Monday, November 16, 1903. In case the plan is not declared operative, the stock deposited hereunder shall be returned without expense."

President Douglas, who represents the Phelps, Dodge & Co. people in their ownership of the United Globe, said:

"I have been for more than twenty years mining in Arizona, and I believe we shall make a great success of this property and be able to sell the treasury stock, if we need to, at a good deal more than $10 per share. The Old Dominion, the United Globe and the Arizona-Commercial are all on the great ore belt of this district. They are not deep mines, because there has been plenty of rich ore in the higher levels. The Old Dominion has been the larger producer, and has been operated at a greater depth. When coke was $40 per ton, and there was no railroad in the camp, the Baltimore Smelting Company, managing this property, made $1,000,000 out of it, besides the $1,000,000 it realized in the sale to the Lewisohn interests. The reason more money has not been made since has been solely due to the lack of sulphur ores properly to smelt copper. The Baltimore management used to produce 800,000 pounds of copper per month by smelting no ores assaying under 18 per cent copper. There is plenty of copper to be had in this property by smelting all ores averaging 9 per cent in value.

"Including the cost of the property, Messrs. Phelps, Dodge & Co. have spent $2,000,000 upon the United Globe, which is now opened 800 feet deep.

"We are erecting a $2,000,000 smelter at Douglas, on the Mexican border, to treat the ores of Bisbee, the Globe district and the sulphurous ores from Mexico. This smelter will be in operation in January and have a capacity of 2,000 tons per day. Although 200 miles away from Globe, we have made such freight contracts as will enable us to put sulphur ores from Mexico, where we have an unlimited supply, into Globe and take the rich carbonate ores of Globe to the Douglas smelter at about $2 per ton for transportation. The United Globe has three times the area of the Old Dominion, but less development and improvement work.

"We consolidate the two properties on the basis of 150,000 shares for each, and to offset the Old Dominion's $250,000 worth of improvements we put $250,000 into the treasury of the United Globe and another $100,000 as equalization payment. Then our stock holdings of 150,000 of the new shares are reduced for the benefit of the treasury by the amount of the Old Dominion supplies, so that Messrs. Phelps, Dodge & Co. may get about 130,000 shares in the consolidated company, and 70,000 shares of the total 350,000 shares will remain in the treasury, and I think it is going to be worth some money. Both these properties at Globe have some sulphide ores, but not enough. At greater depth I think they will be all sulphide. At present I am not surprised to hear reports that the slag from these rich carbonate ores runs from 2 to 3 per cent copper.

"Copper in Arizona is very rich in the upper levels, and in the deeper levels runs to sulphurous ores, which are poorer, but can be more easily smelted. In the Copper Queen camp last year there was no mining below the 400-foot level.

"In the papers which I have just signed a trust is formed under which the money is advanced for present necessities pending the vote of the Old Dominion shareholders.

"No stock is issued except to the Old Dominion stockholders and Phelps, Dodge & Co., and for the treasury of the united companies."

There were deposited up to November 17, 1903, under agreement, 123,881 shares out of the outstanding 150,000 shares. A special meeting is to be held November 30, 1903, to see whether stockholders will authorize the directors to carry out the terms of agreement for an amalgamation of the Old Dominion and the United Globe mines.

W. F. FITZGERALD.

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PRODUCTION OF COPPER IN ARIZONA.

The yearly production of copper in Arizona, as per Government returns, was as follows:

Year.	Pounds fine.
1882	17,984,415
1883	23,874,963
1884	26,734,345
1885	22,706,366
1886	15,657,035
1887	17,720,462
1888	31,797,300
1889	31,586,185
1890	34,796,689
1891	39,873,279
1892	38,436,099
1893	43,902,824
1894	44,514,894
1895	47,953,553
1896	72,934,927
1897	81,530,735
1898	111,158,246
1899	133,054,860
1900	118,319,764
1901	130,778,611
1902	121,085,896

CALUMET & ARIZONA MINING COMPANY.

The Calumet & Arizona Mining Company was incorporated March 1, 1901, with a capital stock of $2,500,000; in 200,000 shares at $10 each issued, and 50,000 shares not issued. The company is incorporated under the laws of the Territory of Arizona; owns eleven mining claims in the Warren mining district, Arizona, of about 150 acres of mineral lands; has a smelter of 500 tons daily capacity, located at Douglas, twenty-six miles from the mine, where it owns about 600 acres of non-mineral lands.

One 250-ton furnace was blown in November 15, 1902, and the product from November 15 to December 31, 1902, was 2,006,047 pounds of copper. The product for the month of December, 1902, was 1,649,000 pounds of copper, 99 per cent fine. The smelter buildings at Douglas were completed and the furnace and converter in operation in less than one year.

Another furnace of 250 tons capacity was blown in last April, and with two furnaces in commission the product of refined copper is expected to be 50 tons daily. There is sufficient ground opened up to keep the 500-ton plant going for several years to come. The shaft is down about 1,200 feet, but the lowest workings recently were at a depth of 1,050 feet.

The company has expended on modern machinery and equipment, as well as buildings at mine, the sum of $117,624. In addition thereto there has been expended for buildings and equipment at smelter $228,567.90, making a total expenditure for equipment of $346,191.90.

Statement of Assets and Liabilities, Exclusive of Real Estate and Treasury Stock, December 31, 1902.

Assets.

Buildings, machinery and equipment at mine	$117,624.00
Buildings and equipment at smelter	228,567.90
Supplies at mine and smelter	39,970.52
Cash and copper on hand, at 12 cents per pound	267,863.67
	$654,026.09

Liabilities.

Bills payable	$350,000.00
Accounts payable at mine and smelter	59,852.35
Balance	244,173.74
	$654,026.09

During the past year a 20 x 60 first-motion Nordberg hoist and steel head frame were installed at the mine; also one air compressor, saw mill, electric generator, Prescott station pump for 1,100-foot lift, and power plant increased by 600 horse-power. There were also erected ore bins of 1,500 tons capacity and a surface tramway of 600 feet for transportation of fuel and timber from railroad to shaft. The stations were all enlarged for handling large tonnage of ore. Ore reserves were materially increased last year, and the mine found richer at the 1,050-foot level than on the levels above. A calculation of the ore in sight, after measurements were taken, was estimated at 1,050,000 tons. The property has proved remarkably rich, and there are sufficient indications to show that the mine is a very valuable one and capable of producing largely. The average of the gold and silver values in the bullion produced rose from $8 per ton in December, 1902, to $12 per ton in February, 1903.

The copper is sent to the works of the Nichols Chemical Company for electrolytic treatment, and it takes fully three months from the date of shipment at the smelter in Arizona before the copper is ready for delivery by the electrolytic works. The firm of Phelps, Dodge & Company are the selling agents for the year 1903. The Calumet & Arizona Mining Company and the Copper Queen Consolidated Mining Company have entered into a contract regarding side lines to the two properties, whereby each agrees to accept vertical lines in all cases as boundaries.

The production of the Calumet & Arizona Mining Company, by months, for the first half of 1903, was as follows, in fine copper:

January	1,546,593	pounds.
February	1,484,862	"
March	1,311,258	"
April	1,802,119	"
May	2,062,420	"
June	2,075,705	"
Total six months	10,282,957	pounds.

The following was the production in blister copper in the months named:

July	2,171,739	pounds.
August	2,678,571	"
September	2,530,349	"

The Calumet & Arizona Mining Company produced in October, 1903, 2,538,000 pounds of Blister copper 99.15% fine. The total official figures of production for the first ten months of 1903 are 20,201,616 pounds.

The officers of the Calumet & Arizona Mining Company are:

CHARLES BRIGGS, *President.*
JOHN S. DYMOCK, *Vice-President.*
GORDON R. CAMPBELL, *Secretary.*
PETER RUPPE, *Treasurer.*

Directors:

CHARLES BRIGGS, JOHN S. DYMOCK,
T. F. COLE, JAMES HOATSON,
GEORGE E. TENER, CHESTER A. CONGDON,
THOMAS HOATSON, PETER RUPPE,
C. D'AUTREMONT, JR.

Office, Calumet, Mich.

BUTTE & BOSTON CONSOLIDATED MINING COMPANY.

The control of the Butte & Boston Consolidated Mining Company passed over to the Amalgamated Copper Company in June, 1901, when 1⅓ shares of Amalgamated were exchanged for 1⅓ shares of Butte & Boston. In taking over the control of Boston & Montana and Butte & Boston the proposition was to give 5⅓ shares of Amalgamated for 1 share of Boston & Montana and 1⅓ shares of Butte & Boston, which was equivalent to 4 shares of Amalgamated, for 1 share of Boston & Montana, and 1 share of Amalgamated for 1 share of Butte & Boston. Before the merging of the companies was consummated three experts looked over the properties of the Boston & Montana and the Butte & Boston and placed the aggregate value of the two Montana properties at $75,000,000, $80,000,000 and $85,000,000, respectively.

There was a force of 559 men operating at and around the mines in 1902. The mines of the company worked last year were Silver Bow No. 1 and No. 3, East Gray Rock, Berkeley and the Blue Jay. The Tramway and Snohomish are being worked by a receiver. The Blue Jay was idle for several months in 1902.

The Silver Bow No. 1 has a main shaft down 1,000 feet. It is a three compartment shaft, with two single-deck cages and an E. P. Allis engine with 16 x 42 cylinder. Electric flashlights are used for call bells. On the 1,000-foot level there is a Reidler pump with a capacity of 800 gallons per minute. The mine is connected with Silver Bow No. 3 at the 700-foot level, and at the 800-foot level with the Pennsylvania mine. There are also connections with Silver Bow No. 2 and with the Berkeley mine. One hundred and six men were employed at this mine in 1902.

The Silver Bow No. 3 main shaft is four compartment, with two single-deck cages and a Risdon engine, 12 x 14 cylinder. The mine is timbered with 10 x 10 square sets. Electric flashlights are in use. There is a compound Knowles station pump with a capacity of 500 gallons per minute at the 600-foot level. Some 65 men were employed at this mine last year. The shaft is down 700 feet.

The East Gray Rock mine has a main shaft down 1,600 feet. There are two double-deck cages for hoisting ore in use, with a 20 x 48 cylinder engine. A Knowles pump of 300 gallons per minute is on the 1,600-foot level, and a Nordberg air compressor of 28 drills capacity is in use. The shaft is three compartment. Connections are made with some of the other mines. The number of men employed at this mine in 1902 was 228.

The Berkeley mine was one of the most active of the Butte & Boston's properties last year. The main shaft is down 900 feet and has three compartments. There are two single-deck cages and an 18 x 32 cylinder. This shaft was started in 1898. There were 518 men employed at and around the Berkeley in 1902.

The Snohomish and Tramway were operated by a receiver last year. The ore from the Snohomish is hoisted through the Berkeley shaft, and that from the Tramway through the West Colusa.

The Blue Jay has a two compartment main shaft down 1,075 feet on an incline of 72 degrees. Below the 600-foot level the shaft is three compartment. There are two single-deck cages, made to conform to the incline, and a 16 x 32 cylinder engine.

The Butte & Boston company put up a smelter in 1892, which is understood to have a capacity of between 600 and 700 tons in 24 hours. It has produced a good deal of copper in the past and large quantities of silver.

The company was reorganized in 1896 with a capital of $2,000,000, divided into 200,000 shares of $10 each. The reorganization reduced the bonded indebtedness from $3,500,000 to $1,500,000. The earnings for the year ending June 1, 1902, as filed with the county assessor at Butte, were returned at $166,136, against $586,052 for the previous twelve months.

The Butte & Boston Consolidated Mining Company filed with the county assessor at Butte, for the purpose of taxation, its statement for the year ended June 1, 1903, giving the following details of operations:

Gross proceeds		$1,849,391
Cost of extraction	$801,400	
Transportation	39,287	
Cost of reduction	524,361	
Refining and marketing	281,935	
Total expenditures		1,646,983
Net proceeds		$202,408

The company paid out for labor $785,705, and for machinery and supplies $540,056.

The mines operated during the last fiscal year were the Gray Rock, Silver Bow No. 1 and Silver Bow No. 2.

Operating statistics for the fiscal year ended June 1, 1903, were:

Tons of ore extracted	245,333
Gross yield per ton	$7.90
Cost of extraction per ton	3.27
Transportation per ton	.16
Reduction per ton	2.44

The officers of the Butte & Boston Consolidated Mining Company are:

H. H. ROGERS, *President.*
W. G. ROCKEFELLER, *Secretary and Treasurer.*

Directors:

H. H. ROGERS, W. G. ROCKEFELLER,
ADOLPH LEWISOHN, W. G. RILEY,
J. PHILLIPS, JR.

PRODUCTION OF GOLD, SILVER AND COPPER IN MONTANA.

PER GOVERNMENT RETURNS.

Gold and Silver, fine ounces; Copper, pounds.

	Year 1902.	Value.	Year 1901.	Value.
Gold ...	212,854.623	$4,400,095.56	232,331	$4,802,717.00
Silver ..	13,629,736.80	*17,022,285.96	14,180,545	*18,334,442.00
Copper .	†211,646,640	24,606,038.37	228,031,503	36,751,837.00
	Year 1900.	Value.	Year 1899.	Value.
Gold ...	229,114.882	$4,736,224.95	223,126.717	$4,819,156.95
Silver ..	14,294,835.11	*18,482,211.05	16,850,754.85	*21,786,834.52
Copper .	245,998.365	39,827,135.29	245,602,314	40,941,905.74
	Year 1898.	Value.	Year 1897.	Value.
Gold ...	254,867.787	$5,247,913.00	217,514.846	$4,496,430.92
Silver ..	14,818,661.98	*19,159,492.17	16,807,346.06	*21,730,710.03
Copper .	216,979,334	26,102,616.29	237,158,540	26,798,915.02
	Year 1896.	Value.	Year 1895.	Value.
Gold ...	209,207	$4,324,700.00	198,405	$4,101,400.00
Silver ..	16,737,500	*21,640,404.00	17,569,100	*22,715,600.00
Copper .	232,096,483	25,356,541.00	201,092,992	21,114,869.00

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* Coining value. † United States Geological Survey returns give 269,707,024 pounds for 1902.

SOURCES OF COPPER SUPPLIES.

PER MESSRS. HENRY R. MERTON & CO.'S FIGURES.

The following table gives the principal sources of copper production during the past six years:

Copper Production.

In Tons of 2,240 Pounds.

	1902.	1901.	1900.	1899.	1898.	1897.
United States.....	294,600	267,410	268,787	262,206	234,271	216,000
Spain and Portugal	49,790	53,621	52,872	52,168	52,375	53,000
Australasia	28,640	30,875	23,020	20,750	18,000	17,000
Chili	28,930	30,780	25,700	25,000	24,850	21,900
Japan	29,775	27,475	27,840	28,310	25,175	23,000
Mexico	35,785	30,430	22,050	19,335	16,435	13,370
Canada and Newfoundland	19,485	20,800	10,400	9,430	10,140	7,705
Africa	4,450	6,400	6,720	6,490	7,060	7,440
Other Europe.....	41,195	39,392	37,015	40,825	36,105	36,795
Other So. America	9,820	11,605	10,395	7,730	5,215	3,400
Total	542,470	518,788	484,799	472,244	429,626	399,730

PARROT SILVER AND COPPER COMPANY.

The Parrot Mine is one of the oldest in Butte, and has produced during its career a large amount of copper. The main shaft is now reported down a depth of 1,700 feet. It is a three-compartment shaft to the 400-foot level, and from there down it has four compartments. Last year there were employed in and about the mine 389 men.

The following were the returns for the year ended June 6, 1902, compared with previous year:

	1902.	1901.
Gross yield	$1,261,772	$1,337,052
Cost of production	684,154	826,855
Net proceeds	577,617	510,196

There is a powerful hoisting engine, having a lifting capacity of ten tons 3,000 feet, and of 2,500 horsepower. There is a steel gallows frame 112 feet at the Parrot Mine. There is an Ingersoll-Sargent compressor plant 22 by 48 by 38 by 48, of 80 drill capacity; also a 22-drill compressor, made by the Rand Drill Company. The hoisting engine has a 28 by 96 inch cylinder, with a flat steel rope ⅝ by 8 inches. The electric flashlight system is used in the mine. There are several exits and connections at different levels with other mines.

Since 1899 this property has been operated under the control of the Amalgamated Copper Company. It has proved a very valuable mine, and its ores are said to run about 3 to 3½ per cent copper.

Ore is raised from the mine by two double-deck cages having 10-ton skips attached. There are improved facilities for the handling and automatic dumping of the ore at surface into chutes built for the purpose. The company does not publish its annual output, but the copper production of the Parrot in recent years has been estimated at somewhat over 10,000,000 pounds. It is believed, however, that the mine is capable of producing a much larger quantity yearly if operations were pushed. In fact, it has done much better than the figures named some years ago, when the copper product by this company reached 14,824,487 pounds, in 1897.

The Parrot Silver and Copper Company is capitalized at $2,300,000, divided into 230,000 shares of $10 each.

For some time previous to October, 1901, the company paid quarterly dividends of $1.50 per share. On that date it was made $1, and the last dividend was 50 cents per share, in January, 1902. Total dividends to July 1, 1903, amount to $5,772,925.

The Parrot Silver and Copper Company has filed with the County Assessor at Butte, for purposes of taxation, its statement for the year ended June 1, 1903, giving the following details of operation:

Gross proceeds		$2,255,869
Cost of mining	$710,832	
Freight on ore	45,591	
Cost of reduction	692,266	
Selling and refining	220,814	
Total expenditures		1,669,503
Net proceeds		$586,366

The mines operated were the Parrot and Bellona.

Operating statistics were as follows for the fiscal year ended June 1, 1903:

Tons of ore extracted	253,284
Gross yield per ton	$8.91
Cost extraction per ton	2.81
Transportation per ton	.18
Reduction per ton	2.73

The Parrot Mine has been in operation for about twenty-three years.

COPPER SMELTING AND REFINING ESTABLISHMENTS.

According to the Census Report on copper smelting and refining in the United States, in 1899 there were in this country 47 copper smelting and refining establishments, which represented a capital of $53,063,395. The number of salaried officers, clerks, salesmen, etc., employed were 976, and the average number of wage-earners were 11,324.

Of the 47 establishments, 27 were engaged in smelting only and 15 in refining only. Five of the plants were engaged in both smelting and refining copper, and the latter constituted the largest establishments.

The total sum paid for all materials other than crude copper, matte and ore was $14,068,522; for salaries, $954,905; for wages, $8,529,021, and for miscellaneous expenses, $1,522,325. The cost of crude copper, matte and ore was $108,105,607, and the grand total cost of production, not including selling expenses and depreciation of plant, was $133,180,380. The aggregate value of the products of these copper smelting and refining plants was $165,131,670.

The total production of copper in the year 1899 covered by the Census Report was 602,595,113 pounds and 27,298,926 pounds of blue vitriol. In the production of this copper there was also turned out 13,229,911 ounces of fine silver and 224,352 ounces of fine gold. The total quantity of ore smelted was 4,039,315 gross tons; of matte purchased, 48,182 tons, and of anodes and blister copper purchased, 284,020 tons.

APPROXIMATE DISTRIBUTION BY PRODUCING STATES AND TERRITORIES OF THE PRODUCT OF GOLD AND SILVER IN THE UNITED STATES FOR THE CALENDAR YEAR 1902.

(As Estimated by the Director of the Mint.)

State or Territory.	Gold.		Silver.			
	Fine ounces.	Value.	Fine ounces.	Coining value.	Commercial value.	Total value.*
Alabama	119	$2,500	100	$129	$53	$2,553
Alaska	403.730	8,345,800	92,000	118,950	48,760	8,394,560
Arizona	198.933	4,112,300	3,043.100	3,934,513	1,612.843	5,725,143
California	812,319	16,792,100	900,800	1,164,671	477,424	17.269,524
Colorado	1,377,175	28.468,700	15,676,000	20,267,960	8,308,280	36,776,980
Georgia	4,730	97,800	400	517	212	98,012
Idaho	71,352	1,475,000	5,354,800	7,569,842	3,103,044	4,578,044
Maryland	121	2,500	——	——	——	2,500
Michigan	——	——	110,800	143.257	58,724	58,724
Montana	211,571	4,373,600	13,343,600	17,123,297	7,019,214	11,392,814
Nevada	140,059	2,895.300	3,746,200	4,843,572	1,985,486	4,880,786
New Mexico	25.693	531,100	457.200	591,127	242,316	773,416
North Carolina	4,390	90.700	20,900	27,022	11,077	101,777
Oregon	87,881	1,816,700	93,300	120,030	49,449	1,866,149
South Carolina	5,896	121,900	300	388	159	122,059
South Dakota	336,952	6,965,400	340,200	439,855	180,306	7,145,706
Tennessee	——	——	12,300	15,903	6,519	6,519
Texas	——	——	446,200	576,905	236,486	236,486
Utah	173,886	3,594.500	10,831,700	14,004,622	5,740,801	9,335.301
Virginia	148	3.100	5,900	7,628	3,127	6.227
Washington	13,166	272,200	619,000	800,323	328,070	600,270
Wyoming	1,879	38,800	5,000	6,464	2,650	41,450
Total	3,870,000	$80,000,000	55,500,000	$71,757,575	$29,415,000	$109,415,000

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* Silver at commercial value.

FRANKLIN MINING COMPANY.

The total quantity of refined copper produced by the Franklin Mining Company during the year 1902 was 5,259,140 pounds, compared with 3,757,419 pounds in 1901 and 3,663,710 pounds in 1900. Of the output for 1902, as above stated, 21,680 pounds were obtained from sands.

The amount of rock stamped last year was 315,687 tons, and the total mineral product derived therefrom was 7,733,535 pounds. The mass and barrel material amounted to 618,485 pounds. The cost of stamping in 1902 was 28.81 cents per ton, against an average of 25.75 cents per ton in 1901. The hardness of the conglomerate rock mined from this property explains the apparent high cost of stamping. The stamp shoes engaged in crushing this class of rock, at the rate of about 375 tons per day, last on an average only two days and seven hours.

During 1902 operations were confined to the old Franklin Mine and the Peninsula Mine of the Franklin Junior. The company has really three distinct mines, viz., the old Franklin, the Franklin Junior, on the Pewabic lode, and the Peninsula Conglomerate, on the Franklin Junior. The original Franklin was organized April 23, 1857, and the prospects for opening up a paying mine were so good that an assessment of 50 cents per share, or $10,000, was considered sufficient to start operations in those early days. Work was continued for two years in a modest way without calling further assessments. At the end of that time

$2 per share was called in to wipe out an indebtedness and to provide money for mining on a larger scale. The output gradually increased each year until it amounted to 1,402,078 pounds of refined copper in 1861. Since that time the Franklin Mine has produced in the aggregate considerably over 100,000,000 pounds of refined copper.

In 1894 the company acquired the Peninsula Mine, previously known as the Albany & Boston. The new purchase gave the company 1,359 acres of additional land northeast of the old mine, and which is now called the Franklin Junior. The rock from this part of the property, together with that taken from the old Franklin, serves to keep the three heads of stamps fully employed. In fact, the stamp mill was crowded to its fullest capacity in 1902, and the installation of a fourth head has been recommended by the manager at the mine. The old Franklin part of the property has been turning out nearly 10,000 tons of rock per month, and is likely to be able to keep this up for a long time to come.

Assets and Liabilities.

December 31, 1902.

Assets.

Cash on hand	$49,694.62
Accounts receivable and copper on hand	108,659.19
Supplies at mine	73,750.58
	$232,104.39

Liabilities.

Drafts outstanding, liabilities at mine, etc	$132,046.34
Balance assets December 31, 1902	$100,058.05

Receipts.

Cash on hand January 1, 1902	$15,247.38	
Copper on hand January 1, 1902, 796,250 pounds, sold for	93,968.25	
		$109,215.63
Copper produced in 1902, 4,435,527 pounds, sold for		$526,800.01
Silver (1902), sold for		949.11
Received on account copper to be delivered		11,000.00
		$647,964.75

Expenditures.

Mine agent's drafts paid	$521,432.00	
Other expenses, smelting, freight, etc.	76,838.13	
		$598,270.13
Cash on hand January 1, 1903		$49,694.62

Copper Account, 1902.

Copper produced, pounds	5,259,140
Copper sold, pounds	4,435,527
Copper on hand January 1, 1903, pounds	823,613

The Franklin Mining Company is organized under the laws of the State of Michigan, with a capital stock of $2,500,000, divided into 100,000 shares of $25 each. The company has paid a total of $1,280,000 in dividends.

Production of refined copper by the Franklin Mining Company for first half of 1903 was as follows:

1903.	Pounds Copper.
January	488,976
February	443,717
March	463,822
April	433,971
May	443,060
June	449,820
Total six months	2,723,366

Production of refined copper by the Franklin Mining Company during the months named was as follows:

July, 1903	442,296 pounds.
August, 1903	428,828 "
September, 1903	393,307 "

The officers are:

FRANCIS H. RAYMOND, *President.*
DANIEL L. DEMMON, *Treasurer.*
JOSHUA D. HOSKING, *Manager.*

Directors:

FRANCIS H. RAYMOND, GEORGE H. FLINT,
JOSIAH Q. BENNETT, DANIEL L. DEMMON,
JOSHUA D. HOSKING.

Office, 15 Congress Street, Boston.

WASHOE COPPER COMPANY.

This property is one of the several valuable companies now under the control and management of the Amalgamated Copper Company.

The company operated the Moonlight and Chambers mines last year. The main shaft at the Moonlight is a three-compartment one, and has been sunk to the depth of 1,300 feet. There is a 20 by 48 inch cylinder Dixon engine, with a flat steel rope ½ by 6 inches, and two Ingersoll-Sargent air compressors, with a capacity of 50 drills, in operation. There were 158 men employed in and about the Moonlight Mine last year.

There are connections on the 700 and 900 foot levels with the Blue Jay, about 1,200 feet west of shaft, on the 900 and 1,300 foot levels with the Never Sweat, about 300 feet southwest of shaft, and on the 900-foot level connection has been made with the Anaconda at a point about 1,600 feet southeast of shaft. The mine is also connected with the Parrot.

The shaft at the Chambers Mine is down only 200 feet. The Washoe includes other mining property besides that named.

The statement filed by the Washoe Copper Company with the County Assessor at Butte, for purposes of taxation, gives the following details of operations for the year ended June 1, 1903:

Gross proceeds		$1,113,784
Cost of mining	$404,469	
Cost of reduction	328,169	
Cost of transportation	15,988	
Total costs		748,626
Expended on new reduction works		903,139
Deficit		537,981

Operating statistics as follows:

Tons of ore extracted	106,588
Gross yield per ton	$10.45
Cost extracting per ton	3.79
Transportation per ton	.15
Reduction per ton	3.08

PRICES OF LAKE COPPER, NEW YORK.

IN CENTS PER POUND.

	1903.		1902.		1901.		1900.	
Month.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
Jan.	12.00	13.00	11.00	13.00	16.75	16.87½	16.25	16.50
Feb.	12.75	13.62½	12.25	13.50	16.85	17.00	16.00	16.50
Mar.	13.75	15.50	12.25	12.50	17.00	17.00	16.25	17.00
Apr.	14.50	15.50	12.00	12.25	17.00	17.00	17.00	17.25
May	14.50	15.50	12.00	12.75	*17.00	17.00	16.50	17.25
June	14.00	15.50	12.25	12.75	17.00	17.00	16.25	16.50
July	13.00	14.25	12.00	12.50	16.50	17.00	16.12½	16.50
Aug.	13.00	13.87½	11.62½	12.12⅛	16.50	17.00	16.50	16.75
Sept.	13.37½	13.87½	11.75	12.25	16.50	17.00	16.75	16.87½
Oct.	——	——	11.75	12.25	16.75	17.00	16.75	16.87½
Nov.	——	——	11.60	12.00	16.50	17.00	16.75	17.00
Dec.	——	——	11.60	12.12⅛	†13.00	17.00	16.75	17.00
Year	——	——	11.00	13.50	13.00	17.00	16.00	17.25

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* Sales reported at 16½. † Reported to have sold lower.

	1899.		1898.		1897.		1896.	
Month.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
Jan.	13.25	17.00	11.00	11.00	11.50	12.00	9.75	10.25
Feb.	17.00	18.50	11.00	11.75	11.87½	12.00	10.25	11.25
Mar.	17.25	18.00	11.75	12.00	11.75	12.00	10.75	11.25
Apr.	18.00	19.37½	12.00	12.50	11.25	11.75	10.75	11.00
May	18.50	19.25	12.00	12.00	11.00	11.00	10.75	11.62½
June	17.87½	18.50	11.75	12.00	11.00	11.25	11.50	12.00
July	18.25	18.50	11.50	11.87½	11.00	11.25	11.00	11.50
Aug.	18.50	18.75	11.50	12.50	11.12⅛	11.37½	10.50	11.15
Sept.	18.37½	18.50	12.25	12.50	11.25	11.37½	10.75	11.00
Oct.	17.00	18.50	12.37½	12.62½	11.00	11.25	10.50	11.00
Nov.	17.00	17.25	12.62½	13.00	10.75	11.00	10.75	11.50
Dec.	16.25	17.25	12.87½	13.25	11.00	11.00	11.25	11.60
Year	13.25	19.37½	11.00	13.25	10.75	12.00	9.75	12.00

	1895.		1894.		1893.		1892.	
Month.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
Jan.	9.85	10.00	10.00	10.25	12.25	12.50	10.75	11.00
Feb.	9.65	10.00	9.62½	10.00	12.00	12.25	10.50	10.62½
Mar.	9.35	9.75	9.37½	9.62½	11.75	12.00	10.50	12.12½
Apr.	9.37½	9.87½	9.37½	9.50	11.00	11.50	11.62½	12.12½
May	9.75	10.75	9.25	9.37½	11.00	11.12½	12.00	12.12½
June	10.50	10.75	9.00	9.12½	10.50	11.00	11.75	12.00
July	10.62½	12.00	9.00	9.12½	10.00	10.50	11.25	11.75
Aug.	11.75	12.25	9.00	9.12½	9.62½	10.12½	11.62½	11.62½
Sept.	12.00	12.25	9.12½	9.87½	9.75	9.87½	11.12½	11.50
Oct.	11.87½	12.25	9.50	9.75	9.75	9.75	11.00	11.87½
Nov.	11.00	11.75	9.37½	9.50	9.75	10.25	11.75	12.37½
Dec.	10.00	11.00	9.50	10.00	10.37½	10.50	12.12½	12.37½
Year	9.35	12.25	9.00	10.25	9.62½	12.50	10.50	12.37½

MONTREAL & BOSTON COPPER COMPANY.

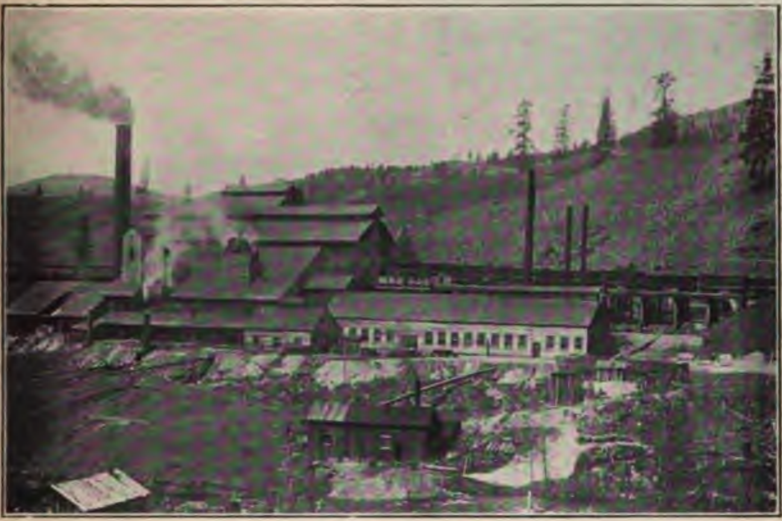
We are able to give the following interesting description of the Montreal & Boston Copper Company:

"The properties of this company are situated in Deadwood Camp, of the Boundary Creek District, British Columbia, and consist of four claims; have a total area of 112 acres, held under Crown grant; also smelter site of 32 acres, and town site of 80 acres. It is one of the most promising properties in British Columbia, and by the actual work done so far gives promise of becoming one of the most profitably operated copper mines on the North American Continent.

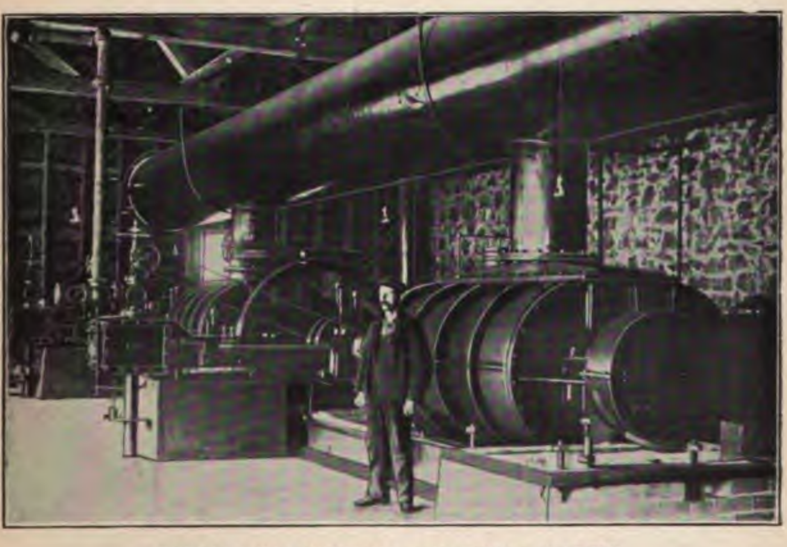
The company was organized in 1898, under the laws [illegible] ia, with a capitalization of $3,000,000, the [illegible] value of $5, being full paid and non-[illegible] is listed on the Boston Exchange, [illegible] dealt in on the curb in the New York [illegible] office of the company is located at [illegible] Montreal, Canada; the mine office [illegible] The State Street Trust Company, [illegible] & Munroe, 25 Broad Street, New [illegible], and the Old Colony Trust [illegible] the Knickerbocker Trust Com-[illegible] Registrars of the stock.

[illegible] of the company are as follows:

E. H. MELVILLE, *President.*
J. N. GREENSHIELDS, *Vice-President.*
THOMAS CROCKETT, *Second Vice-President.*
A. MUNROE, *Secretary and Treasurer.*



GENERAL VIEW OF THE MONTREAL AND BOSTON CO.'S SMELTER AT BOUNDARY FALLS, B. C.



ENGINE ROOM MONTREAL AND BOSTON SMELTER.

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"In addition to these the following constitute the Board of Directors:

J. C. MacDIARMID,
W. F. BEAL,
J. WESLEY ALLISON,
CHAS. M. JESUP,
EVERETT B. WEBSTER,
J. W. PYKE.
HARRY JOHNS, *Mine Superintendent.*
ALBERT I. GOODELL, *Smelter Syperintendent.*
MALCOLM GALBRAITH, *Mining Engineer.*

"The properties of this company show four lenticular ore bodies carrying low-grade sulphide ores containing larger percentages of iron, silica and lime, the composition rendering the ores absolutely self-fluxing. The development has been secured, also the Jewel Morrison No. 7 Ruby, King Solomon, C. O. D. and Florence Fraction. The ores carry a little gold. The ore is low grade, and would not be worked under ordinary circumstances; but the conditions surrounding this property are altogether extraordinary. The ore is in very large bodies and mined at exceptionally low cost. The self-fluxing nature of the ore and other advantages enable the company to smelt at a fraction of the usual cost.

"The main shaft at the Sunset Mine is 412 feet deep, and the Crown Silver shaft is 265 feet. There is an 880-foot tunnel, 502 feet of raises, 64 feet of winzes, 311 feet of drifts and 3,800 feet of cross cuts, giving a total of 6,234 feet of underground openings, with 250,000 tons of ore blocked out for stoping and about 1,500,000 tons of ore in sight. An important strike on the 150-foot level of the Crown Silver Mine in December, 1902, gave assay values of about $11 per ton, or practically double the previous average value. A trestle leads from the Sunset shaft to a 2,000-ton ore bin on the railroad track, whence ore is loaded into cars for shipment to the smelter. The mine has a good power equipment, including a No. 6 Cameron sinking pump, 80-horsepower double-cylinder Lidgerwood hoist, with 14 by 20 inch cylinders; 100-horsepower double-cylinder Jenckes drum hoist, one-half of a 20-drill duplex Ingersoll-Sargent air compressor, a 10-drill air compressor, two 80-horsepower boilers, power drills, machine shops, smithy, assay office, bunk houses and boarding house.

"The smelter is at Boundary Falls, four miles from the mine, and is served by the Canadian Pacific Railway. The Great Northern Railroad is building to the district. The smelter is 120 by 182 feet and 78 feet in height. It was built in 1900-'01 with a single furnace by the Standard Pyritic Smelting Company, but was never used until bought by the Montreal & Boston Copper Company, and blown in June 10, 1901. The furnaces are 40 by 176 inches at the tuyeres, nominally of 300 tons and actually of about 400 tons daily capacity. The second furnace was blown in December 1, 1902, and the third is being set and will be blown in about March, 1903. The smelter has crushers, rolls, Vezin and Bridgman automatic samplers, belt conveyors, No. 7 Connersville blowers, steam hoist, 250-light dynamo, etc. The dust flue, of stone and brick, is 200 feet long, and the stack is 9 feet 6 inches in diameter and 112 feet in height. Smelter has 16 ore bins, each 10 by 34 in size, in the building, also 3 large ore bins and coke bins outside, railroad tracks running above all bins.

"Fuel is cheap and ordinarily abundant, but a five-month strike in the Canadian coal districts in 1902 caused

CHARGING FLOOR MONTREAL AND BOSTON SMELTER, BOUNDARY FALLS, B. C.

DRAWING OFF SLAG AT THE MONTREAL AND BOSTON SMELTER.

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a serious fuel shortage and greatly reduced the production of the smelter. There is plenty of water in the district, and the company owns a good water power in Boundary Falls, adjoining the smelter. For 1903 the company plans installing five new furnaces and a converter plant, the product of the smelter now being turned out as matte, averaging 45 to 50 per cent fine copper. Production for 1902 was 1,800,000 pounds, and 1903 output is estimated by the company at 13,000,000 pounds. The mining and smelting costs are probably as low as can be found anywhere, and the company has a good management. It seems altogether likely that the Montreal & Boston will speedily take a leading place among the Canadian copper mines, and a position of no mean importance in the list of the world's large producers.

"The strike in the coke mines during the early part of 1903 caused a temporary closing down of furnaces, but operations have recently been resumed with most satisfactory results. It is stated that a large body of high-grade ore has recently been discovered in some of the properties and the profits of operations are now quite substantial."

The illustrations printed elsewhere give a very good idea of the magnitude of the Montreal & Boston Copper property.

PRODUCTION OF COPPER IN THE UNITED STATES, 1845-1902.

(Long Tons.)

Year.	Total production.	Lake Superior.	Percentage of Lake Superior of total production.
1845	100	12	12
1846	150	26	17.3
1847	300	213	71
1848	500	461	92.2
1849	700	672	96
1850	650	572	88
1851	900	779	86.6
1852	1,100	792	72
1853	2,000	1,297	64.9
1854	2,250	1,819	80.8
1855	3,000	2.593	86.4
1856	4,000	3,666	91.7
1857	4,800	4,255	88.6
1858	5.500	4,088	74.3
1859	6,300	3,985	63.3
1860	7,200	5,388	74.8
1861	7,500	6,713	89.5
1862	9,000	6.065	67.4
1863	8,500	5,797	68.2
1864	8,000	5,576	69.7
1865	8,500	6,410	75.4
1866	8,900	6,138	69
1867	10,000	7,824	78.2
1868	11,600	9,346	80.6
1869	12,500	11.886	95.1
1870	12,600	10,992	87.2
1871	13,000	11,942	91.9
1872	12,500	10,961	87.7
1873	15.500	13,433	86.7
1874	17,500	15,327	87.6
1875	18,000	16.089	89.4
1876	19,000	17,085	89.9
1877	21,000	17,422	83
1878	21,500	17,719	82.4
1879	23,000	19,129	83.2
1880	27,000	22,204	82.2

PRODUCTION OF COPPER IN THE UNITED STATES, 1845-1902—Continued.

Year.	Total production, United States.	Lake Superior.	Percentage of Lake Superior of total production.	Montana.	Percentage of Montana of total production.	Arizona.	Percentage of Arizona of total production.
1881	32,000	24,363	76.1	....	....	....	....
1882	40,467	25,439	62.9	....	....	....	....
1883	51,574	26,653	51.6	11,011	21.3	10.658	20.7
1884	64,708	30,961	47.8	19.256	29.8	11,935	18.4
1885	74,052	32,209	43.5	30,267	40.9	10,137	13.7
1886	70,430	36,124	51.3	25,362	36	6,990	9.9
1887	81,017	33,941	41.9	35,133	43.4	7.910	9.7
1888	101,054	38,604	38.2	43,704	43.2	14,195	14
1889	101.239	39,364	38.7	43,849	43.3	13.654	13.5
1890	115,966	45,273	38.9	50,437	43.5	15,534	13.4
1891	126.839	50.992	40.2	50,028	39.5	17,800	14
1892	154,018	54,999	35.7	72,860	47.3	17,160	11.1
1893	147,033	50.270	34.2	69,290	47.1	19.200	13.1
1894	158,120	51,031	32.3	81,729	51.6	19,873	12.6
1895	169,917	57,737	34	84,900	50	21,408	12.6
1896	205,384	64,073	31.2	99.071	48.2	32,560	15.8
1897	220,571	64,858	29.4	102,807	46.6	36.398	16.5
1898	235,050	66,291	28.2	92,041	39.2	49,624	21.1
1899	253.870	65.803	25.9	100,503	39.6	59.399	23.4
1900	270.588	64.938	24	120,865	44.7	52,820	19.5
1901	268,782	69.772	25.9	102,621	38.2	58,383	21.7
1902	294,423	76,165	25.9	128,975	43.8	53,547	18.2

COPPER RANGE COMPANY.

The property of the Copper Range Company of Michigan is officially given as follows:

Fifty thousand shares of the Champion Copper Company, capitalized for 100,000 shares, the remaining 50,000 shares being owned by the St. Mary's Mineral Land Company.

Ninety-three hundred acres of land, lying west of and contiguous to the Champion Mine location, extending entirely across the copper-bearing formation, and upon which no explorations have yet been made.

The entire capital stock of the Copper Range Railroad Company, having a par value of $2,605,100.

A frontage of about four miles on Lake Superior, adjacent to the Champion Mill site, and containing the most desirable unoccupied stamp mill sites in Houghton County.

For additional mileage now completed and including the Calumet Division, the Copper Range Company will receive $600,000 additional first mortgage bonds of the railroad company, which will be an available asset.

Financial Statement.

Copper Range Company.

December 31, 1902.

Assets.

Land, 9,360 acres	$1,285,962.18
Timber lands purchased	8,982.01
50,000 shares of Champion Copper Company stock at par	1,250,000.00
26,051 shares of Copper Range Railroad Company stock at par	2,605,100.00
Bills receivable, advances to railroad for new construction	616,617.75

Houghton Office:		
Exploration	**$9,064.80**	
Construction	**5,465.17**	
Saw mill construction	**5,666.26**	
Stamp mill site	**3,994.60**	
		24,190.83
Cash		**6.952.11**
		$5,797,804.88

Liabilities.

Capital stock	**$2,299,700.00**
Bills payable, advances from Copper Range Consolidated Company	**951,173.92**
Stumpage	**2,865.51**
Accounts payable	**198.41**
Profit and loss	**2,543,867.04**
	$5,797,804.88

Officers of the Copper Range Company are:

WILLIAM A. PAINE, *President.*
FREDERIC STANWOOD, *Secretary and Treasurer.*

Directors:

WILLIAM A. PAINE, CHARLES A. SNOW,
JAMES H. SEAGER, CAMERON CURRIE,
FREDERIC STANWOOD.

IMPORTS AND EXPORTS OF BAR AND INGOT COPPER INTO FRANCE, 1895-1902.

(Metric Tons.)

Source.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.
England	8,250	5,596	3,881	5,970	8,650	3,289	5,100	4,963
Chile	3,491	4,573	2,801	4,169	4,442	3,509	2,690	3,698
United States	11,157	21,279	28,118	26,210	21,470	33,187	22,001	35,401
Other countries	11,717	12,197	14,830	10,712	13,650	14,246	14,318	7,825
Total	31,618	43,645	49,636	47,361	51,212	54,231	44,409	51,887
Less exports	1,910	5,144	4,766	5,458	8,285	7,651	7,510	5,513
Net imports	29,708	38,501	44,870	41,903	42,927	46,580	36,899	46,374

COPPER CONSUMPTION OF GERMANY, 1895-1902.

Per Messrs. Aron Hirsch & Sohn.

(Metric Tons.)

	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.
Imports	59,742	73,123	82,903	89,772	89,746	106,676	78,538	97,249
Exports	10,893	12,452	12,568	14,957	20,304	15,618	14,825	13,571
Excess of imports	48,849	60,671	70,335	74,815	69,442	91,058	63,713	83,678
Production	26,013	29,489	29,468	30,704	37,676	32,423	30,335	29,728
Total	74,862	90,160	99,803	105,519	107,118	123,481	94,048	113,406
Copper content of imported* copper ore and iron pyrites	4,500	5,000	3,500	4,000	4,500	6,500	4,500	5,500
Home consumption	70,362	85,160	96,303	101,519	102,618	116,981	89,548	107,906

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*Deducted to avoid duplication, being included in both imports and production.

GERMAN CONSUMPTION, BY MANUFACTURERS' REQUIREMENTS, 1900, 1901, AND 1902.

(Metric Tons.)

Use Specified.	1900.	1901.	1902.
Electrical works	43,000	26,000	37,000
Copper rolling mills (rods and sheets)	18,000	16,000	18,000
Brass rolling mills and wire works	35,000	29,000	32,000
Chemical works, inclusive of blue vitriol	2,000	2,000	2,000
Shipyards, railroads, for castings, alloys, German silver, etc	19,000	17,000	19,000
Total	117,000	90,000	108,000

ELECTROLYTIC COPPER REFINERIES.

It is figured that the output of electrolytic copper in the United States now amounts annually to over 550,000,000 pounds. There are ten leading refineries in this country where copper is treated by the electrolytic process, and some minor plants where copper is thus treated. The number of electrolytic refineries in the world number about 33, ranging in capacity from 30 to 5,000 tons per month of refined copper.

The location of the Eastern refineries at seaboard is a most advantageous one, as the metal arrives not only from the Western mines, but also in large quantities from Europe, by steamer. As the exports of copper from this country are mostly in the form of electrolytic copper, tidewater facilities mean much to shippers in transportation saving.

The great plant of the Raritan Copper Works, located at Perth Amboy, N. J., is so situated as to benefit by the double advantage of rail and water transportation facilities. These celebrated works were erected a few years ago by Messrs. Lewisohn Brothers, and after the United Metals Selling Company was organized to take over the business of the firm named this splendid property passed to the control of the United Metals Selling Company, and has been under its management since. The Raritan refinery was completed and went into operation in the summer of 1899. It is equipped with the most modern improvements, and has all the facilities for treating copper on an immense scale. Contracts are made with a number of the principal producers for the regular treatment of their product. The bullion is forwarded in the shape of pigs from the mines to the refinery, where it is subjected to the electrolytic process, whereby the gold and silver contents are recovered and the copper turned out in a refined state in whatever shape ordered.

The Guggenheim Refinery, at Perth Amboy, N. J., is under the management of the American Smelting and Refining Company. It has a capacity of from 100 to 150 tons a day. The metal treated at this plant comes largely from Mexico, Utah and Colorado, and in the process of separation a very large quantity of silver and a good amount of gold are obtained.

The Nichols Chemical Company is a very large smelter and refiner of copper, and treats the metal coming from Arizona, Montana, California and elsewhere. The capacity of its electrolytic plant is equal to about 120 tons

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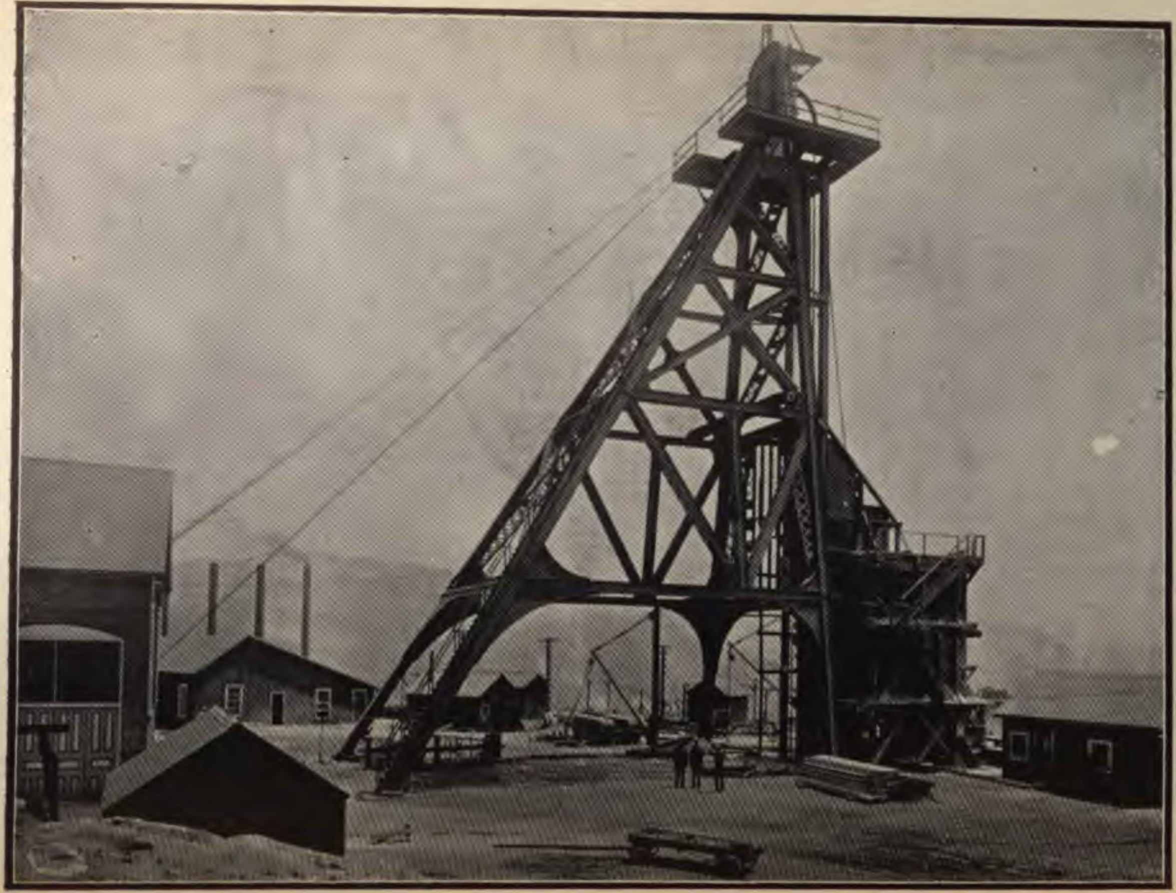

STEEL GALLOWS FRAME, DIAMOND MINE, BUTTE of 2,000 pounds per day. A large quantity of silver and considerable gold are secured from the bullion which it handles. The other prominent electrolytic refineries are the Baltimore Smelting and Rolling Company's plant, at Baltimore, Md.; the Boston and Montana Refinery, at Great Falls; the Anaconda Mining Company's; the De Lamar Copper Refining Works, at Carteret, N. J.; the Balbach Smelting and Refining Company, at Newark, N. J.; the plant owned by the Calumet & Hecla Mining Company, at Buffalo, N. Y., and the Chicago Copper Refining Company, at Blue Island, Ill. The foreign electrolytic refineries are small establishments in comparison with those in this country, although the first patents for refining copper by this process were taken out in England between 1865 and 1869. The first electrolytic copper refinery was erected at Pembrey, near Swansea. Germany started a small refinery in 1872.

BUTTE, MONTANA.

The city of Butte has a population of about 61,000 people, and at this centre there has been developed the greatest copper mining camp in the world. It is not quite forty years since the first prospectors came to Butte and were rewarded for their adventurous spirit by their find of rich gold deposits.

In 1875 the first rich silver ore was discovered, and some time after the first copper ore was taken from what is now known as the Parrot Mine. In 1879 the Colorado

Smelting Company built a plant for turning out copper matte, or regulus, and in 1881 the first railroad reached the district. A year later the copper production of Montana amounted to 9,058,284 pounds, and in 1883 was more than double that quantity. The development of the copper resources of the district since then has been at a wonderful rate. It is estimated that the total production of ore of the Butte district has been about 31,000,000 tons, averaging 5 per cent copper.

The Butte mining district is officially described as covering an area of approximately four by six miles, or twenty-four square miles. It is estimated that the average daily output of the Butte mines is at the rate of 100,000 cubic feet of rock. The copper deposits occur in quartz-pyrite veins. There are enormous bodies of copper glance. There are few outcrops to the veins, and the difficulty of tracing the apex of a vein is well calculated to baffle and bewilder the best expert.

The copper minerals of the Butte ores consist chiefly of chalcocite (copper glance), bornite (peacock copper), enargite (sulpharsenide of copper), and cupriferous pyrite. The Anaconda ledge is frequently 100 feet wide and will average half that width, as will also the Syndicate lode.

BOSTON CONSOLIDATED COPPER AND GOLD MINING COMPANY, LIMITED.

The Boston Consolidated Copper and Gold Mining Company, Limited, is a corporation organized under the laws of Great Britain and owning the entire capital stock of an American corporation organized under the laws of the State of New York, known as the Boston Consolidated Mining Company, which in turn owns the mining property situated in Bingham, Utah, known as the Boston Consolidated Mining Company. The property consists of about 400 acres.

In other words, a foreign corporation not being allowed under our laws to own real estate in this country, an American company was formed to hold the property, and the foreign company to own the stock of the American company. The capital stock of the foreign company is 500,000 shares of £1 each. There has not been any increase in the capital stock, and there is no intention of increasing it at the present time. There is also no intention at the present time (August 25, 1903) of building a smelter. There is a possibility, however, that the company may place a contract with some of the local smelters to the ores from the company's mines for a term of years.

The Boston Consolidated Copper and Gold Mining Company closed a contract in September, 1903, with the Bingham Consolidated Mining and Smelting Company for the treatment of 200 tons of ore per day for two years, shipping of ore to begin end of October, 1903. The developments at the mine are very encouraging.

The officers of the foreign company are:

DUDLEY RYDER, *Chairman.*
GEORGE H. JOHNSON, *Secretary.*
DUDLEY RYDER, SAMUEL NEWHOUSE,
FRANK L. GARDNER, MOTT NEWHOUSE,
REGINALD WARD, ELMER E. ABERCROMBIE,
FRANK A. SCHIRMER.
Office, 4 Great Winchester Street, London.

The American company is a corporation of 100,000 shares, par value $5. Its officers are:

SAMUEL NEWHOUSE, *President.*
ELMER E. ABERCROMBIE, *Vice-President.*
FRANK A. SCHIRMER, *Treasurer.*
WILLIAM C. TAYLOR, *Secretary.*
Office of the Boston Consolidated Mining Company, 146 Devonshire Street, Boston.

CONSUMPTION OF COPPER IN ENGLAND.

As per the figures of Messrs. James Lewis & Son, Liverpool, the consumption of copper in England during the first eight months of 1903 was as follows, compared with the same period in three previous years, in long tons:

	First 8 months. 1903.	First 8 months. 1902.	First 8 months. 1901.	First 8 months. 1900.
Imports from United States	13,158	36,923	14,779	23,512
Imports from other countries	77,039	78,837	85.093	82,106
	90,197	115,760	99,872	105,618
Exports from England—				
Manufactured	16,295	15,258	10,452	10,242
Unmanufactured	23,019	33,726	34,512	29,691
	39,314	48,984	44.964	39,933
Difference	50,883	66,776	54,908	65,685
Difference in stocks	†1,806	†705	†3,131	*6,346
Apparent consumption in England (sulphate of copper included)	52,689	67,481	58,039	59,339
Exports of sulphate of copper	12,320	9,833	8,605	9,628
Consumption of England	40,369	57,648	49.434	49,711

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†Decrease. *Increase.

CONSUMPTION OF COPPER IN GERMANY.

The official German returns show the movement of copper in Germany for periods given, in long tons:

	First 7 months. 1903.	First 7 months. 1902.	First 7 months. 1901.	First 7 months. 1900.
Imports from United States	36,549	35,780	26,921	39,323
Imports from England	5,045	4,944	4,771	5,829
Imports from other countries	7,669	7,041	7,150	7,419
Total imports	49,263	47,765	38,842	52,571
Exports	6,283	5,517	5,449	6,607
Consumption of foreign copper (pyrites excluded)	42,980	42,248	33,393	45,964

CONSUMPTION OF COPPER IN FRANCE.

Returns show the following consumption of copper in France for periods named, in long tons:

	First 8 months. 1903.	First 8 months. 1902.	First 8 months. 1901.	First 8 months. 1900.
Shipments from United States	13,964	21,209	11,300	22,312
Shipments from England	2,132	2,845	2,682	1,556
Imports from other countries	12,707	9,238	12,575	9.328
	28,803	33,292	26,557	33,196
Exported	312	——	250	1,600
Difference in stocks	*3	†471	†1,758	*1,137
Apparent consumption of France	28,488	33,763	28,565	30,459

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*Increase. †Decrease.

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CAMERON CURRIE.

MICHIGAN COPPER MINING COMPANY.

The organization of this company was effected in June, 1898, for the purpose of taking over the mines in Ontonagon County, Michigan, formerly worked many years ago by the Minesota Mining Company and the Rockland Mining Company, together with certain adjacent lands. The company was organized under the laws of the State of Michigan, with a capital stock of $2.500,000, divided in 100,000 shares of $25 each. At the outset 67,035 shares were issued for the purchase of the mining property and to furnish funds for opening and working the mines thereon.

Development work was prosecuted for several months, and on January 5, 1899, a meeting of stockholders was held in Detroit, when it was voted to call in all of the certificates of stock previously issued, and to issue in lieu thereof new certificates representing 67,035 shares of the capital stock, as of $10 per share paid in, in payment for the entire property acquired by the company, together with the improvements thereon, and to sell the remaining 32,965 shares, as of $10 per share paid in, for the sum of not less than $329,650, thus issuing all of the shares of the capital stock, as of $10 per share, or $1,000,000 paid in, the same being assessable under the laws of Michigan for the further sum of $15 per share, or $1,500,000.

These 32,965 shares were accordingly sold, and realized the sum of $350,000, or a premium of $20,350. At said meeting it was voted to remove the office of the company to New York, and the present Board of Directors was elected.

On January 25, 1899, the former officers of the company turned over to the new officers the proceeds of the sale of the 32,965 shares of stock, viz., $350,000, and the balance of cash in their hands of $2,246.80.

The investment in real estate includes the sum of $40,000, paid for a deed given by authority of a vote of all of the stockholders of the Rockland Mining Company of the property on record in the name of that company, this company having possession by virtue of tax titles only. The sum of $10,500 was also paid for the land owned by the Superior Mining Company, which was sold at public auction in October, 1899, upon the dissolution of that company. These lands comprise about 800 acres, and as they add 50 per cent to the area of this company's property of the "Minesota lode" and the "Calico lode," the purchase is considered a fortunate one. The "Minesota lode" traverses the property for 1½ miles.

The directors' report of operations during the calendar year 1902 was as follows:

Receipts.

Balance on hand December 31, 1901	$13,972.08
On account of Assessment No. 1	2,073.00
On account of Assessment No. 2	188,398.00
Sales of copper, 166,898 pounds, at 12.17 cents	20,319.21
Interest received	1,114.52
	$225,876.81

Expenditures.

Expended at mine	$157,563.65	
Expenses of Boston Transfer Office, registration of stock, salaries, etc	5,992.86	
Smelting, freight, etc	1,388.35	
Total expenditures		164,944.86
Surplus December 31, 1902		$60,931.95

The management is convinced that the developments made in the extensive openings of the mine warrant the erection of a stamp mill and the commencement of production on a liberal scale. Preparations are going forward for handling a large output, by the erection of shaft rock houses, a powerful hoisting engine and a high duty compressor of large capacity.

Operations are carried on at Shafts "A," "B" and "C," but "C" shaft has been only sunk 355 feet. The principal shafts are "A" shaft and "B" shaft. On March 1, 1903, "A" shaft had been sunk 1,528 feet. "A" shaft is located about 1,000 feet northeasterly of the boundary line between the National and Michigan mines, on the line of strike of the lode. The distance from "A" shaft to "B" shaft is 985 feet, and the distance from "B" shaft to "C" shaft is 1,353 feet. "A" and "C" shafts are both three compartment, 7 by 18 feet inside of timbers. "B" shaft was originally a double compartment shaft 7 by 12 feet inside timbers to first level, and from that point to bottom the same dimensions as "A" and "C." The enlargement of "B" shaft from a two to three compartment shaft from the first level to surface was completed during May, 1902.

The company is working upon three copper veins, known as the "Calico," "Branch" and South or "Minesota" vein. The "A" and "B" shafts were sunk to open up the "Calico" lode, but the other veins above mentioned are being developed. The "Branch" vein makes its appearance about the fifth level, and has been opened to the twelfth level. Its dip between the eighth and ninth levels is 50° 24′; between the tenth and eleventh levels, 60°, and between the eleventh and twelfth levels it is 70°. In the lower levels of the mine it approaches close to the "Minesota" conglomerate vein, and may eventually run into it. The "Minesota" vein has a dip of 52° 12′ from the tenth to the twelfth levels. It is expected that with the junction of the "Branch" lode with "Minesota" conglomerate bodies of heavy copper may be found; and if this should prove the case, the Michigan Copper Mining Company will be ready to start upon a career of profitable mining operations.

The stamp mill of the Mass Company went into operation on Michigan rock about the middle of November, 1903, with one head, having a capacity of about 500 tons of rock daily.

Statement of Receipts and Expenditures from Date of Organization to December 31, 1902.

Michigan Copper Mining Company.

Receipts.

Capital stock issued for purchase of mine, as of $10 per share paid in on 67,035 shares	$670,350.00
Capital stock issued for cash, 32,965 shares at $10 per share	329,650.00
Premium received on sale of 32,965 shares	20,350.00
Cash received from stockholders before reorganization	28,346.80
Sales of copper	25,722.37
On account of Assessment No. 1	99,850.00
On account of Assessment No. 2	188,398.00
Interest received	7,484.83
	$1,370,152.00

Expenditures.

Real estate (paid for mine)	$670,350.00	
Real estate (land since purchased)	56,769.19	
	$727,119.19	
Net expenditure for equipment, mining, etc.	582,100.86	
		1,309,220.05
Surplus December 31, 1902		$60,931.95

Officers of the Michigan Copper Mining Company are:

JOHN STANTON, *President.*
J. WHEELER HARDLEY, *Secretary.*
J. R. STANTON, *Treasurer.*

Directors:

JOHN STANTON, J. WHEELER HARDLEY,
JOSEPH E. GAY, J. R. STANTON,
ALFRED M. LOW.

Transfer Agent, American Loan and Trust Company, 53 State Street, Boston.

Registrar, Old Colony Trust Company, Ames Building, Boston.

Office, 15 William Street, New York.

The annual meeting of stockholders is held on the first Tuesday in May in each year.

COLORADO MINING AND SMELTING COMPANY.

The property of this company is controlled by the Amalgamated Copper Company. The Gagnon Mine, operated by the Colorado Mining and Smelting Company, is a Butte mine. The shaft is down 1,800 feet, on an incline of about 75 degrees, and has three compartments. There is an air shaft 700 feet west of the main shaft which connects all levels down to the 1,800-foot level. There were 380 men employed in and around the mine last year. The hoisting engine is one of the Dixon make, 22 by 48 inch cylinder, and there are two three-ton skips, with 1⅛-inch rope. A ten-drill Rand compressor is also in use.

The Colorado Mining and Smelting Company filed its statement with the County Assessor of Butte, for purposes of taxation, giving the following details of operation for the year ended June 1, 1903:

Gross proceeds		$998,638
Costs of mining	$581,126	
Freight on ore	37,693	
Cost of reduction	336,728	
Total expense		955,547
Net proceeds		$43,091

Other details of operation for year ended June 1, 1903:

Tons of ore extracted	235,680
Cost per ton	$2.49
Transportation per ton	.16

COPPER RANGE RAILROAD COMPANY.

This is a recently built and equipped road, operating in the copper country in Michigan. The mileage in operation December 31, 1902, was 63.13 miles of track laid and 21.86 miles of permanent spurs. Since the opening of the railroad there has been a remarkable development of the territory adjacent thereto. An extension to Calumet and Laurium (20 miles of road) was completed this spring, except ballasting, and both freight and passenger trains were expected over the new branch in May, 1903.

The following table shows earnings for twelve months ending December 31:

	1902.	1901.	Increase.
Gross	$303,052.52	$133,201.99	$169,850.53
Net	136,654.98	28,803.44	107,851.54
Charges	69,125.01	51,375.00	17,750.01
Surplus	67,529.97	*22,571.56	90,101.53

* Deficit.

Earnings for three months ending March 31:

	*1903.	1902.	Increase.
Gross	$94,211.74	$48,889.26	$45,322.48
Net	32,128.35	12,643.67	19,484.68
Charges	17,625.00	16,250.01	1,374.99
Surplus	14,503.35	†3,606.34	18,109.69

* March, 1903, figures approximate. † Deficit.

Profit and Loss Account.

Copper Range Railroad Company.

To December 31, 1902.

Balance from income	$21,934.56	Earnings six months	$182,382.58
Operating expenses	90,369.57		
Interest on bonds and taxes	35,274.74		
Balance to credit of profit and loss account December 31, 1902	34,803.71		
	$182,382.58		$182,382.58

Balance Sheet.

December 31, 1902.

Cost of road to June 30, 1902	$3,876,945.91	Balance from income	$34,803.71
Cost of equipment to June 30, 1902	215,602.25	Capital stock	2,605,100.00
New construction	519,307.44	First mortgage bonds	1,410,000.00
New equipment	84,670.84	Bills payable (C. R. Co.)	616,617.75
Personal injury expense	500.00	Car service balances	863.74
Insurance expense	814.93	Traffic balances	12,272.97
U. S. Express Co.	410.58	Audited vouchers	95,846.74
Fuel	8,091.57	Accrued interest	17,700.00
Audited bills	50,446.50		
U. S. P. O. Dept.	441.60		
Treasurer	3,722.40		
Material and supplies	5,969.66		
Station agents	8,389.53		
Cash	17,891.70		
	$4,793,204.91		$4,793,204.91

Officers of the Copper Range Railroad Company are:

WILLIAM A. PAINE, *President.*
JAMES H. SEAGER, *Vice-President.*
FREDERIC STANWOOD, *Secretary and Treasurer.*

Directors:

WILLIAM A. PAINE,
JAMES H. SEAGER,
RUFUS R. GOODELL,
JOHN H. RICE,
FRANK McN. STANTON,
SAMUEL L. SMITH,
CAMERON CURRIE,
*EDWARD B. MALTBY,
FREDERIC STANWOOD.

R. T. McKEEVER, *General Manager,* Houghton.

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* Deceased.

Earnings for 1903.

	Gross.	Net.
January	$28,292.96	$7,850.40
February	27,918.78	10,217.95
March	38,437.26	18,675.99
April	37,014.11	16,203.32
May (approximate)	40,000.00	18,000.00
June (approximate)	45,000.00	20,250.00
	$216,663.11	$91,197.66
Less six months' interest charges		35,250.00
		$55,947.66

ADVENTURE CONSOLIDATED COPPER COMPANY.

This company was organized on October 17, 1898, under the laws of the State of Michigan, with a capital stock of $2,500,000, divided into 100,000 shares of $25 each.

Work was begun November 1, 1898, and included considerable clearing of the surface preparatory to underground operations. The lands of the company comprise those of three former properties, as follows:

	Acres.
Adventure lands proper	779.57
Knowlton lands	596.75
Hilton lands	320.00
Total area	1,696.32

In addition thereto the company has a mill site of 223.90 acres on the shore of Lake Superior, which has a frontage of one mile upon the lake.

The Adventure and Hilton lands are contiguous, and the Knowlton lands are a little over a mile west of the Adventure, with the property of the Mass Consolidated intervening. The company owns approximately about two and one-half miles of mineral range.

Six lodes traverse the property, and are known as the Knowlton, Merchant, Mass, Butler, or Champion, Ogima and the Evergreen. The Butler lode is the most productive. The stopes on this vein are generally wider than those on the other lodes, and nearly all showed barrel copper and some mass, while a good deal of intervening barren ground was encountered.

The mine is operated by both shafts and tunnels, and the total length of openings at the beginning of 1903 was 25,435 feet, giving 110,000 cubic fathoms of stoping ground.

No. 1 shaft was sunk 173 feet in 1902, and was 10 feet below the sixth level. It has since reached the seventh level, or a depth of 725 feet from the surface.

No. 2 shaft was sunk 246 feet last year, or to 30 feet below the fifth level. No rock is hoisted from this shaft.

No. 3 shaft reached 60 feet below the fifth level by the end of 1902, and further sinking has been under way in 1903. This shaft was widened from a point below the surface to the third level last year.

The company has been working on several lodes, and progress in depth has been slower than it would have been if operations had been confined to developing a mine from one lode.

The new stamp mill was started experimentally on September 20, 1902, but only for a few hours. In October No. 2 and No. 3 heads were started running regularly. There were some short stoppages for slight repairs. The main trouble was with the jigs and No. 1 stamp head, owing to defects in minor parts. The mill has three Allis-Chalmers heads of the latest pattern, and they are furnished with Parnall-Krause mortars. No. 2 stamp on a test run showed ability to treat rock at the rate of 520 tons per day.

During 1902 hoisting engines were erected at No. 1 and No. 3 shafts. Steel-frame houses have been built for these engines. No. 1 rock house is 50 by 60 feet, with power house attached 36 by 40 feet, containing a Corliss engine, which operates the rock house machinery, also a 75-kilowatt direct-coupled engine and generator, which furnishes the electric power for operating the electric tramway in the Butler tunnel, as well as for lighting purposes. The rock house contains four rock breakers, two 18 by 24 inches and two 13 by 20 inches; also steam hammer.

No. 1 shaft house is of steel, 24 feet square and 87 feet in height; this connects with the rock house by a double-track steel-trestle gravity road 450 feet in length and from 12 to 55 feet in height. A similar steel trestle has been erected from the Butler tunnel to No. 1 rock house for electric haulage. A combination shaft and rock house 42 by 80 feet was erected at No. 3 shaft last year. The machinery for rock breaking is similar to that at No. 1 rock house.

Total Receipts and Expenditures.

January 1, 1903.

Received from capital stock	$1,600,000.00	
Received from interest	21,024.99	
Received from sales of copper and silver (669,644 pounds copper)	82,759.65	
		$1,703,784.64
Paid for mining property	$250,000.00	
Mining expense and construction	1,343,812.40	
All other expenses	40,401.33	
		1,634,213.73
		$69,570.91

An assessment of $2 per share was called, payable July 20, 1903. A similar assessment was due October 15, 1902.

The production of the Adventure Mine for the first half of 1903 was as follows, in pounds fine copper:

	Pounds.
January	215,495
February	274,517
March	255,019
April	230,963
May	233,781
June (estimated)	163,000
Total six months	1,372,775

There were two heads of stamps in operation in July, 1903.

Officers of the Adventure Consolidated Copper Company are:

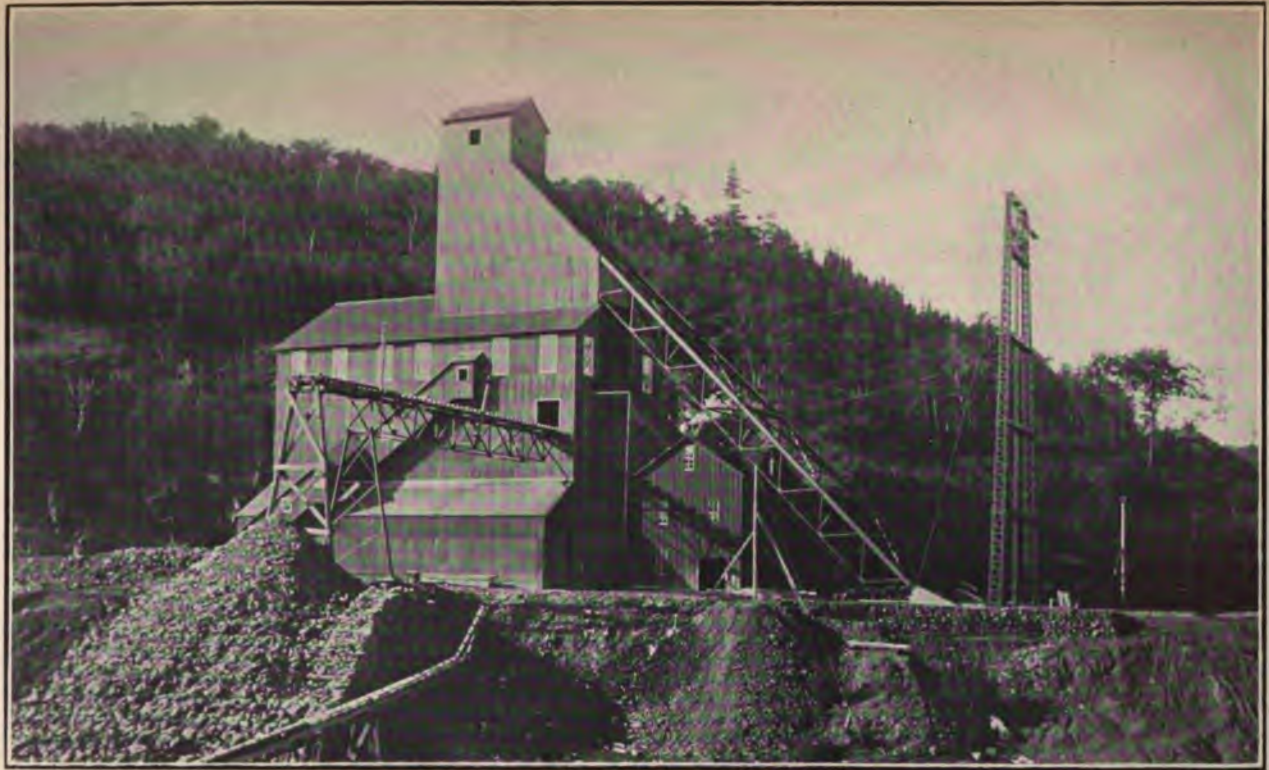
CHARLES J. DEVEREAUX, *President.*
WM. R. TODD, *Secretary and Treasurer.*
W. A. O. PAUL, *Assistant Secretary and Treasurer.*

Directors:

CHARLES J. DEVEREAUX, JOHN BARKER,
ISAAC H. MESERVE, WM. R. TODD,
HENRY A. WYMAN, JAMES S. DUNSTAN.

Office, 45 Broadway, New York.

Transfer Agent, Old Colony Trust Company, Boston.



ADVENTURE MINE, NO. 3 SHAFT AND ROCK HOUSE.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS.

IMPORTS OF COPPER INTO THE UNITED STATES.

Imports of copper into the United States for the first eight months of 1903 were as follows:

	Ore and regulus.		Pigs, bars, ingots, etc.	
1903.	Tons.	Value.	Pounds.	Value.
January	21,636	$472,160	9,668,795	$1,142,046
February	19,301	255,492	8,977,600	1,125,586
March	28,706	372,453	9,849,265	1,201,105
April	19,673	228,604	11,570,442	1,431,138
May	17,358	218,972	13,610,875	1,788,011
June	18,685	238,822	10,877,816	1,377,882
July	24,955	275,315	11,623,860	1,468,572
August	25,560	256,501	12,027,537	1,517,168
Total eight months	175,874	$2,318,319	88,206,190	$11,051,508

The imports of copper into the United States during the past three years were as follows:

Calendar	Ore and regulus.		Pigs, bars, ingots, etc.	
year.	Tons.	Value.	Pounds.	Value.
1902	181,566	$8,695,780	103,129,568	$13,051,159
1901	96,047	14,692,645	73,826,406	11,812,216
1900	55,112	5,195,010	68,796,808	10,557,870
Total three years	332,725	$28,583,435	245,752,782	$35,421,245

UNITED STATES MINING COMPANY.

The total authorized capital stock of this company is $12,500,000, divided into 500,000 shares of $25 each, of which 419,200 shares have been issued. Of the issued stock there are outstanding in the hands of stockholders 412,637 shares, 6,563 shares remaining in the treasury.

The mines owned by this company are located in Bingham, Utah, and consist of the Old Jordan (on which are situated the Old Telegraph, Niagara and Old Jordan mines), Commercial, Galena, Live Pine, Fannie Bemis, Steamboat, Giant Chief, Bully Boy and Silver Shield.

In addition thereto the United States Mining Company acquired the stock of the Centennial-Eureka Mining Company in 1901. The Centennial-Eureka Mine contains a large amount of high-grade silicious ore carrying gold, silver and copper, while the United States mines have an excess of iron. By combining the ores better results were believed to be possible than could be obtained by separate smelting.

The company owned a smelter site of more than 150 acres near Salt Lake City, and upon this site a smelter has been constructed having a capacity of 1,000 tons of ore per day. The erection of the smelter was begun in the summer of 1901, and actual smelting with one furnace was begun in November, 1902. The smelter has been planned to handle a large amount of ore economically, and the aim has been to introduce almost every possible labor-saving device.

In June, 1903, four furnaces were in full operation, and the fifth was expected to start soon. The company was said to be handling about 18,000 tons of ore per month through the new smelter. One month the run got up as high as 20,000 tons. With five furnaces in operation a maximum treatment of 25,000 tons per month is thought possible by the management.

For a time some mechanical difficulties were encountered in operating the new smelter, and it was shut down for a few days to make needed repairs. Work was resumed the latter part of May, 1903, with three furnaces in commission, and in June four were in blast. It is claimed that the smelter is a metallurgical success, and that the difficulties have been of a mechanical nature, and that greater success is possible. The bin capacity is to be doubled, dust chambers extended and a new briquetting machine added to that part of the plant.

The United States Mining Company has confined operations on its property in Bingham to the Old Jordan vein, as it is the largest vein and most accessible. The lowest workings in the United States mines are about 375 feet in depth, and as adjoining mines are opened much lower the belief is that better values may be obtained in these mines as depth is reached.

Since March 1, 1900, exploration work on the Old Jordan vein has resulted in opening up 23,539 feet. Development work since above date, and previous thereto, has developed, according to expert calculation, over 1,000,000 tons of workable ore.

After acquiring the Centennial-Eureka property in 1901 that property was closed down, so far as production of ore was concerned, until the new smelter was completed at West Jordan. The main shaft was retimbered during the time production was suspended, and underground exploration was carried on as far as possible. Stoping was resumed about September 1, 1902, and was regulated to the needs of the smelter. During the spring of 1903 the company was hoisting about 250 tons per day. The main shaft of the Centennial-Eureka is to be sunk an additional 500 feet, during the balance of 1903, beyond the recent depth of 1,400 feet. It is estimated that there are in sight in the Centennial-Eureka Mine over 500,000 tons of workable ore.

In August, 1903, the company was operating four furnaces at its smelter, and an output of between 240,000 and 250,000 pounds of bullion weekly was expected, which, it was thought, would enable the company to show net earnings of about $100,000 per month.

In October, 1903, the United States Mining Company was operating four furnaces at its smelter, and making $100,000 a month net. It is expected that the company's product for the calendar year 1903 will amount to about 10,000,000 pounds of copper. United States Mining ore runs about $8 per ton in values. Centennial-Eureka runs about $28 per ton. The precious metals in this property bring the net cost of the copper product down to a very low point. There are five furnaces built at the smelter, and the plant is planned for six furnaces. Several economies have been introduced at the mines and smelter, and the United States Mining Company is getting into shape to make a large product, and to make it cheaply, so that the net revenues will be on a handsome scale.

The output of copper bullion in September, 1903, was returned at 582,530 pounds.

Statement of Assets and Liabilities of the United States Mining and Smelting Companies at Close of Business February 28, 1903:

Assets.		
Cash and accounts receivable	**$263,830.76**	
Special deposit to pay coupons	**11,200.00**	
United States Mining Company stock, 6,536 shares at $25	**164,075.00**	
Bonds and stocks	**3,932,013.67**	
Real estate and property	**6,932,796.93**	
		$11,303,916.36
Liabilities.		
Notes and accounts payable	**$492,716.36**	
Bonds	**320,000.00**	
Coupons due March 1, 1903	**11,200.00**	
Capital stock issued, 419,200 shares	**10,480,000.00**	
		$11,303,916.36
Notes and accounts payable	**$492,716.36**	
Cash and accounts receivable	**263,830.76**	
	$228,885.60	
Smelter Construction.		
Accounts payable, unadjusted, as reported from Salt Lake office	**33,225.45**	
	$262,111.05	

The total amount expended since January 1, 1900, was $1,706,164.31, of which $892,987.03 was expended in the construction and operation of the smelter and its auxiliary works, and $813,177.28 in the purchase of new properties, development and equipment of mines, payment of interest and general expense. Total received from sale of bullion to February 28, 1903, was $382,500, and amount then unpaid upon bullion shipped estimated at $69,319.

The voting trustees reported February 28, 1903, that the indebtedness of the company (exclusive of the bonds) consisted of notes amounting to $525,000, and accounts payable at mines and smelter estimated at $75,000. To offset which there was in hand cash $138,525.33, and the amount unpaid on bullion shipped and on hand ready for shipment estimated at $175,000. The voting trustees further stated on February 28, 1903, that it was safe to say that the net debt of the company (exclusive of bonds), less cash assets, did not then exceed $300,000.

Prior to January 1, 1903, only four carloads were shipped east from the smelter, containing 244,680 pounds of bullion ready for refining, worth, according to assays, 29.2 cents per pound. From January 1, 1903, to February 28, 1903, twenty-one carloads were shipped east, containing 1,276,440 pounds of bullion, worth, according to assays, 29.7 cents per pound. These values were based upon silver at 47 cents per ounce and copper at 11½ cents per pound. The trustees figured then on earnings for 1903 of $1,500,000 net. With the recent improvement in prices for copper the prospect for increased earnings is apparent.

The mines are officially stated to be opened ahead for approximately six years, and developments are being constantly pushed.

Officers of the United States Mining Company for 1903-1904:

R. D. EVANS, *President.*
W. H. COOLIDGE, *Acting President.*
A. F. HOLDEN, *Managing Director.*
C. A. HIGHT, *Clerk.*
F. W. BATCHELDER, *Secretary and Treasurer.*

Directors:

FREDERICK AYER,
WILLIAM H. COOLIDGE,
ROBERT D. EVANS,
EUGENE N. FOSS,
CLARENCE A. HIGHT,
ALBERT F. HOLDEN,
STILLMAN F. KELLEY,
NEHEMIAH W. RICE,
SIDNEY W. WINSLOW.

Office, 4 Post Office Square, Boston.

ENGLISH AND FRENCH COPPER STATISTICS.

The following estimates show the movement of copper in England and France, in tons of 2,240 pounds:

	1902. Tons.	1901. Tons.	1900. Tons.	1899. Tons.
Consumption in England........	84,777	77,349	81,896	60,877
Consumption in France.........	45,172	35,419	39,615	37,362
Imported into England.........	160,201	149,578	154,941	141,610
Exported from England.........	79,978	79,400	67,725	85,316
Imported into France..........	45,000	33,833	42,593	40,192
Deliveries all Europe...........	291,207	227,533	269,635	222,816
Visible supply December 31.....	16,540	22,051	28,860	22,817

	1898. Tons.	1897. Tons.	1896. Tons.	1895. Tons.
Consumption in England........	69.284	69,787	76,036	50,692
Consumption in France.........	36,922	38,826	35,769	22,692
Imported into England.........	139,704	136.555	135,856	119,941
Exported from England.........	76,448	71,386	72,489	77,990
Imported into France..........	37,437	39,205	36,358	22,795
Deliveries all Europe...........	234,951	224,696	217,066	149,976
Visible supply December 31.....	27,896	31,955	34,927	45,817

Highest and lowest prices of G. M. B. or Standard copper:

	1902.	1901.	1900.	1899.
Highest	£56 15 0	£73 12 6	£79 15 0	£79 5 0
Lowest	45 7 6	47 0 0	69 0 0	57 17 6

	1898.	1897.	1896.	1895.
Highest	£57 10 0	£51 13 9	£50 8 9	£47 8 9
Lowest	48 6 3	47 0 0	40 10 0	38 13 9

UNITED VERDE COPPER COMPANY.

The United Verde Mine is one of the largest copper producers in Arizona, and one of the richest mining properties in the world. The territory consists of from about 250 to 260 acres of land. When operations were first begun it was with a view of mining for gold, but as developments progressed the mine was found richly mineralized with gold, silver and copper ores. The presence of the precious metals brings the actual cost of producing the large copper output down to a low figure. As there are said to be immense deposits of ore blocked out and other enormous deposits as yet untouched, the exceedingly valuable character of this property is beyond question.

The company has a capital of $3,000,000, divided into 300,000 shares of $10 each. Senator W. A. Clark, of Montana, is the chief owner. Operations at the mine were suspended for a considerable portion of 1902, owing to a fire in the underground workings. Curtailed output and lower prices for copper had the effect of cutting down profits last year much under what they were in 1901. The net revenue reported for the year 1902 is $927,654, of which $159,757 was interest and rentals. This compares with a net revenue of $3.235,845 in 1901.

The production of copper for a series of years was as follows, in pounds fine:

1902 (estimated)....	20.000.000	1897...............	31,355,025
1901...............	34,520,695	1896...............	22,327,950
1900...............	39,970,193	1895...............	16,491,402
1899...............	43.995.932	1894...............	10,904,453
1898...............	42,328,926	1893...............	9,121.146

The United Verde ore is said to average about 7 per cent copper, with good values in gold and silver. It would be difficult to calculate the intrinsic value of this property. The openings have been made on a monstrous body of ore of great width and richness, and as the workings are down only about 800 feet, the indications give positive assurance of a long life for this remarkable mine. A new shaft was started on the property a couple of years ago at a distance of 900 feet from the former main shaft. The new shaft has five compartments, and has reached the depth of 800 feet. It is said that in sinking this shaft sulphide ore was struck at 600 feet, and the shaft has not been out of it since. It is understood the new shaft will be driven another 100 feet. One of the new 500-ton blast furnaces has been recently completed and put in commission, and the whole plant is said to be running nearly to full capacity. The levels at the mine have been gradually opened up, and if the fire proves to be completely smothered both mines and smelting furnaces are expected to run full blast, when about 900 men will be employed. The United Verde operates an 800-ton smelter, and a large portion of the company's output is shipped to the Waclark Wire Works, at Elizabeth, N. J., where it is drawn out into copper wire.

The officers of the United Verde Copper Company are:

W. A. CLARK, ***President.***
JAS. A. McDONALD, ***Vice-President.***
J. C. KENNEDY, ***Secretary and Treasurer.***

Office, 49 Wall Street, New York.

OLD COLONY COPPER COMPANY.

The Old Colony Copper Company was organized in December, 1898, with a capital stock of $2,500,000, divided into 100,000 shares of $25 each. The company has a territory of 1,200 acres in Houghton County, Michigan, upon which not less than 75 distinct amygdaloid lodes have been located by means of the diamond drill. Several of these lodes present favorable indications. The company intends to examine the best of the lodes cut, and by means of exploratory shafts, drifts and crosscuts ascertain whether the mineral deposits are extensive enough to furnish copper in quantities sufficient to make the mining of it profitable.

A tunnel was started at the line of the eastern sandstone on the property to crosscut all the lodes running through the company's land. The tunnel has been driven nearly 2,700 feet from the opening, and several lodes have been encountered in its progress which it was hoped would prove valuable. At a distance of about 200 feet from the sandstone an amygdaloid lode was disclosed, and lying directly on top of it was a conglomerate lode. As the Old Colony property lies in the same zone as the Calumet & Hecla mine, the management felt encouraged to expect that there was a chance of discovering one or more valuable lodes by their exploratory methods. It was, therefore, gratifying to find about 1,000 feet from the mouth of the tunnel a big conglomerate lode over 30 feet wide, and about 50 feet further west an amygdaloid lode having a width of 18 feet.

The Old Colony Copper Company has been engaged in the work of original research in exploring its lands, and had no data from adjoining mines to indicate the direction or character of the mineralization, as the territory north and south of them had never been explored, except in a superficial way by the early settlers, and by the Mayflower mine to the north. The company will continue the search in the effort to locate good pay ground. Operations at the tunnel have been discontinued, but the knowledge obtained by work done there will be utilized in mapping out future work. The diamond drill was started in 1901 and used in 1902, the amount of drilling done in the latter year being 2,000 feet.

The cores from five lodes indicate rich copper deposits, and the intention is to examine the best of these by exploratory shafts, drills and crosscuts, and ascertain whether they carry copper in paying quantities to produce. Opening work was done at what is known as the Old Colony West Lode last year, but the vein was found changeable. It is deemed advisable, however, to continue exploration of the lode for the purpose of proving its permanent character. The mining superintendent believes from what the diamond drill has disclosed and from other evidence that a number of very promising lodes traverse the property and should be thoroughly explored.

Old Colony Copper Company.

Financial Statement.

By the Treasurer.

October 1, 1902.

Receipts.

To cash on hand October 1, 1901				$66,667.02
To interest account			$1,554.83	
To rent account			1,151.35	
To supply account			429.17	
To fuel account			496.05	
To bills receivable			485.44	
				4,116.84
				$70,783.86

Expenditures.

By mining expense, including labor and material			$28,112.01	
By general expense			6,139.53	
By construction account			990.97	
By equipment account			457.15	
By taxes			3,030.05	
By all other expenses			2,774.06	
By bills payable			1,748.25	
Cash on hand October 1, 1902		$22,037.40		
Bills receivable	$7,202.34			
Bills payable	1,707.90			
		5,494.44		
			27,531.84	
				$70,783.86

Officers of the Old Colony Copper Company are:

H. F. FAY, *President.*

GEO. G. ENDICOTT, *Secretary and Treasurer.*

Directors:

H. F. FAY, GEO. G. ENDICOTT.
JOHN C. WATSON, WM. HOWELL REED,
STEPHEN R. DOW, ROGERS L. BARSTOW.
JAMES CHYNOWETH.

Office, 60 State Street, Boston.

EXPORTS OF COPPER FROM THE UNITED STATES.

The following were the exports of copper from the United States, as per the returns of the Metal Exchange, in tons of 2,240 pounds:

	1903. Tons.	1902. Tons.	1901. Tons.
January	10,478	15,474	9,845
February	8,935	14,001	7,589
March	12,941	20,015	6,624
April	13,670	16,400	4,929
May	9,207	15,493	10,910
June	8,606	13.258	9,428
July	8,405	11,370	7,563
August	10,638	11.814	6.408
September	12,000	12,627	6,354
October	18,101	12,234	7,571
November	14.522	10,829	6,367
December	——	10,751	8,620
Totals	——	164,266	92,208

The exports of copper from the United States in previous years were as follows, in tons of 2,240 pounds:

Year.	Tons.	Year.	Tons.
1900	159,612	1897	129,210
1899	119,812	1896	125,605
1898	145,115		

WHITE KNOB COPPER COMPANY, LIMITED.

The stockholders of the White Knob Copper Company, Limited, voted in January, 1903, to reduce the par value of the stock from $100 per share to $10 per share, and authorized an increase of $500,000 of stock (50,000 shares, par value $10 each) in order to provide for the sale and conversion of an issue of $500,000 6 per cent ten-year sinking fund gold debentures. It has been provided that the said debentures shall be convertible, on February 15, 1905, or any interest day thereafter, into stock of the company at the rate of 80 shares of stock for each $1,000 debenture.

The issue of the aforementioned bonds has been for the purpose of providing $250,000 as an available working capital, which will be necessary when smelting operations begin, and to reimburse the company for funds expended during the six months to December, 1902, in carrying on development work in the mine, providing heavier rails for the electric railway, and a supply of coke, coal, etc. The board of directors sold to a syndicate the $500,000 debentures and 10,000 shares of stock, reserving to the stockholders the privilege of participating in said syndicate to the extent of one-third of their holdings up to February 15, 1903.

The principal work done at the property at MacKay, Idaho, was the driving of the Albert tunnel at a depth of 700 feet below the quarry, opening to a connection with the main shaft. This tunnel furnishes ventilation and facilitates far more rapid development in the lower levels. In addition to the bodies of ore heretofore found on the upper levels the driving of this tunnel has proven the ore for a length of 552 feet, an average width in excess of 23 feet, and averaging a trifle over 3 per cent copper and in excess of $1.75 in gold and silver, according to information received. It is expected to start smelting operations in June, 1903. A week's trial of the smelter on this class of ore is understood to have proven a cost of less than $5 per ton, and a capacity for each smelter of over 450 tons. The total capacity of the company's smelters is placed at approximately 1,000 tons daily.

The total authorized capital stock at present is $2,000,000, of which there is $1,500,000 outstanding, the balance being reserved for the conversion of the 6 per cent debentures.

The first stack of the smelter went into commission October 5, 1903. It is expected to treat 500 tons of ore per day.

The second furnace of the White Knob Company was expected to start up during the last half of November, 1903.

Officers of the White Knob Copper Company, Limited, are:

H. J. LUCE, *President.*
W. K. MATTHEWS, *Vice-President.*
C. B. VAN NOSTRAND, *Treasurer.*
C. G. FUNK, *Secretary.*
A. M. POOLE, *Assistant Secretary and Assistant Treasurer.*

Office, 36 Wall Street, New York.

ABERDEEN COPPER COMPANY.

This company was organized in 1901 with a capitalization of $1,000,000, divided into 40,000 shares of $25 each. The following official information has been submitted to us: "The Aberdeen Copper Company now owns some 70 claims situated near Aberdeen, Grant County, New Mexico. The lowest workings are on the Malachite shaft, and are 310 feet deep. A crosscut is being driven at the third level and ore bodies should soon be encountered. On the second level the vein was 11 feet wide and averaged $3.40 in gold, 8 ounces of silver, and 8.4 per cent lead. There are nine other shafts on the property that are down from 60 feet to 175 feet, with some drifting and crosscutting."

A portion of the property is galena carrying about 1 per cent copper and 8 per cent lead, and gold and silver. About two-thirds of the property are copper ores showing bornite and chalcopyrite. These ores contain a varying percentage of lead and all carry gold and silver. The gold will average about $10 per ton and the silver 15 ounces. Places have been found where the ore runs as high as $100 in gold. The company is surveying for patents and contemplates doing considerable new work this year. The concentration mill is being enlarged and remodeled.

Fiscal Office, 44 New Street, New York.
R. HORTON BATCHELOR, *Treasurer.*

VICTORIA COPPER MINING COMPANY.

This company has an extensive territory of about 2,009 acres, located in Township 50, Ontonagon County, Michigan. It was incorporated in January, 1899, under the laws of the State of Michigan, with a capital stock of $2,500,000 divided into 100,000 shares of $25 each.

The property was operated in a small way previous to the organization of the present company, and four shafts were sunk upon the tract of land owned by the Victoria company. These shafts did not go very deep below the surface until the new management took hold, and since then the developments have been pushed forward at No. 2 shaft chiefly.

Operations have gone on steadily at No. 2 shaft for the past several years, and ground has been opened at this point down to the seventeenth level. During the year 1902 No. 2 shaft was sunk 376 feet and 4,535.25 feet of drifting was done east and west of this shaft at nearly all the levels below the fourth level. The total openings in the mine to December 31, 1902, were 20,299.90 feet.

In 1902 it was found that the dip of the vein changed from 61 degrees from horizontal to about 55 degrees. At the fifteenth level the two veins noticed between the seventh and eighth levels came together again, as expected. The copper bearing part of vein in all levels varies in width from 6 to 40 feet. The drifts at the twelfth, thirteenth and fourteenth levels showed good stamp and barrel copper. At the twelfth level over 1,000 feet of good ground is reported. Other levels varied in the quality of mineralized ground, but at several levels the vein showed up good copper.

The company completed a steel and concrete dam across the Ontonagon River in 1902. The dam is 600 feet long over all, 24 feet high at wings, and contains about 6,000 cubic yards of concrete and 50 tons of steel. There are six head gates for power or canal use, each 7 x 6 feet, and two flush gates 4 feet in diameter. One small concrete dam across creek on canal to power house has also been built, 130 feet long and 24 feet high. These important improvements will enable the Victoria mine to successfully utilize the valuable water power now available for use. Winzes have been sunk east and west of No. 2 shaft for proving up the ground, improving the ventilation, and putting the mine in position to stope.

Victoria Copper Mining Company.

Statement of Receipts and Expenditures
From Date of Organization to December 31, 1902.

Receipts.

Subscription to capital stock, 100,000 shares at $7 per share	$700,000.00	
From Assessment No. 1	264,830.00	
Interest	26,317.04	
Rent	5,053.01	
Saw logs	101.42	
Unclaimed pay	44.65	
Miscellaneous	415.79	
		$996,761.91

Expenditures.

Real estate	$372,722.91	
Plant	74,647.53	
Organization expense	2,926.10	
Legal expense	1,761.60	
General expense	26,286.94	
Water power expense	26,677.64	
Surface expense	44,037.01	

Mining expense	201,334.94	
Unwatering mine	5,807.04	
Taxes	9,638.37	
Insurance	1,055.08	
Exchange	31.67	
Supplies	15,186.92	
	$782,113.75	
Balance of receipts over expenditures	$214,648.16	$996,761.91

Victoria Copper Mining Company.

Assets and Liabilities.

December 31, 1902.

Assets.

Cash in bank		$38,392.91
Due on Assessment No. 1		35,170.00
Collateral loans		175,000.00
		$248,562.91

At Mine.

Cash	$1,255.25	
Supplies	10,798.75	
Saw logs	330.60	
		$12,384.60
		$260,947.51

Liabilities.

Unclaimed pay	$44.65
Balance of assets December 31, 1902	$260,902.86

Officers for 1903:

CALVIN AUSTIN, *President.*
CHARLES D. HANCHETTE, *Vice-President.*
JAMES P. GRAVES, *Secretary, Treasurer and Transfer Agent.*

Directors:

CHARLES D. HANCHETTE,
CALVIN AUSTIN,
FRED H. BEGOLE,
FRED H. WILLIAMS,
WILLIAM F. HUMPHREY.

Office, 53 State Street, Boston.

MELTING POINT OF METALS.

	Degrees Fahrenheit.		Degrees Fahrenheit.
Aluminum	700	Iron (cast)	2,786
Antimony	800	Lead	612
Bismuth	500	Manganese	2.700
Cadmium	442	Mercury (boils at)	670
Cobalt	2,500	Nickel	2,500
Copper	2.000	Silver	1.873
Gold	2,016	Tin	442
Iron (wrought)	3,280	Zinc	773

MAYFLOWER MINING COMPANY.

Operations were continued at this property during the year 1902 by additional shaft sinking, extending drifts and driving crosscuts. In the fall of 1901 an amygdaloid vein about 15 feet wide was discovered near the northern boundary of the property. As a test pit sunk on the lode showed it to be thickly impregnated with copper, it had been decided to put down a shaft to explore the vein and prove its value at greater depth. The shaft had been sunk to a depth of 556 feet in March, 1903, and although it cannot be positively stated at this writing that the lode carries sufficient copper to make it commercially valuable, the repeated disclosure of good stamp rock encourages the company to do further drifting north and south at the present depth until the character of the lode is more definitely known.

The shaft on the Mayflower reached the rock after sinking about 50 feet through sand. At the fifth level a crosscut reached the lode at a distance of 90 feet, at which point drifting about 220 feet north was done. Barrel copper and some very good stamp rock was found on this level at times, but not enough as yet to prove commercial value. This lode has been cut by the diamond drill on the Old Colony property adjoining the Mayflower on the south, and the showing warrants the management in making a thorough test of the vein. The two properties carry the same lodes, and the developments on either property must be of special interest to both. Test pits and other shafts have been sunk at different points on the property, and several amygdaloid lodes and a conglomerate belt were located, but after examination of different veins it was decided to pass them by. The company owns 840 acres of land in Sections 7 and 8, Township 56, Range 32, Houghton County, Michigan; also a mill site on Torch Lake. The Mayflower Mining Company was organized in May, 1899, with a capital of $2,500,000, divided into 100,000 shares of $25 each.

Mayflower Mining Company.

Treasurer's Statement.

December 31, 1902.

Receipts.

To cash on hand January 1, 1902		$117,806.63
To interest	$3,173.80	
To machinery and equipment	936.67	
To rent	757.65	
To bills receivable 1901	48.00	
		4,916.12
		$122,722.75

Expenditures.

By mining expense, including labor and material		$32,644.09	
By general expense		6,165.74	
By fuel account		161.75	
By supply account		241.81	
By taxes		1,204.62	
By all other expenses		2,680.36	
By bills payable 1901		2,094.60	
		$45,192.97	
By cash on hand January 1, 1903	$79,153.40		
Less bills payable at mine	1,623.62		
		77,529.78	
			$122,722.75

Officers of the Mayflower Mining Company are:

H. F. FAY, *President.*
GEO. G. ENDICOTT, *Secretary and Treasurer.*

Directors:

H. F. FAY,
JOHN C. WATSON,
STEPHEN R. DOW,
GEO. G. ENDICOTT,
MANNING EMERY,
JAMES CHYNOWETH.

Office, 60 State Street, Boston.

RHODE ISLAND COPPER COMPANY.

This company was organized in 1898 with a capital of $2,500,000, divided into 100,000 shares of $25 each.

The property is located north of the Franklin Junior Mine, and consists of 800 acres. The statement of receipts and expenditures for the year ending December 31, 1902, was as follows:

Balance on hand January 1, 1902	$31,415.85	
Received from interest, etc	1,354.46	
Received from assessment	84,374.00	
		$117,144.31
Paid for mining expenses, taxes and all other expenses		39,040.80
Leaving unexpended		78,103.51
Assessment unpaid		15,626.00
Balance January 1, 1903		$93,729.51

Two shafts have been sunk on the property, but operations at No. 1 shaft were discontinued early in 1902, as conditions did not warrant doing further work there. No. 1 shaft has been sunk about 515 feet below surface.

No. 2 shaft was sunk 505 feet in 1902, and is down 1,000 feet from surface. Cross cuts were started east and west and north of the shaft. The Albany and Boston conglomerate lode was opened at a distance of 500 feet from surface, and now, at greater depth, the management hopes to find the lode more promising than heretofore. Several hundred pounds of mass copper were taken out while drifting in the lower workings.

The officers of the Rhode Island Copper Company are:

CHARLES J. DEVEREAUX, ***President.***
JAS. L. BISHOP, ***Vice-President.***
WM. R. TODD, ***Secretary and Treasurer.***
W. A. O. PAUL, *Assistant Secretary and Treasurer.*

Office, 45 Broadway, New York.

MICHIGAN SMELTING COMPANY.

This is a new corporation with a capital of $500,000, divided into 20,000 shares of $25 each.

The company is engaged in constructing a new smelter at Lake Superior, where the product from the South Range group and other mines will be treated.

The new plant has been planned by Messrs. F. Klepetko and F. l. Cairns, and when completed it will have the largest smelting furnaces at the Lake, and when in full operation will be able to smelt 60,000,000 pounds of copper per annum. The site is on Portage Lake, near where the former Atlantic Stamp Mill was located. All the appointments and machinery of the new smelting plant will be of the most modern and approved design. It is confidently expected that the smelting costs at the new works will be considerably lower than the average charges. The company is a close corporation, and no stock will be offered on the open market.

Officers of the Company are:

WILLIAM A. PAINE, *President.*
FREDERIC STANWOOD, *Secretary and Treasurer.*

Directors:

WILLIAM A. PAINE,
FREDERIC STANWOOD,
C. H. PAINE,
JOHN STANTON,
F. I. CAIRNS.

UNION COPPER, LAND AND MINING COMPANY.

The lands of this company are located on the Mineral Range in Michigan, and consist of about 7,200 acres. There are still standing on this extensive territory over 3,000,000 feet of hemlock and about 300,000 cords of hard wood, besides a quantity of cedar, spruce, basswood, etc.

The company was reorganized in 1898 with a capital of $2,500,000, divided into 100,000 shares of $25 each. Of this amount 80,000 shares are issued. The corporation can either sell or develop its lands, and, possessing these privileges under its charter, its opportunities become apparent.

While the property is valuable for the timber on it, the chief source of interest attached to it lies in the probable mineral wealth contained within the area of its numerous acres. During 1901 and 1902 the company had each tract of land carefully surveyed by a competent engineer. The area, contour and boundaries of each parcel have been noted. The outcrops of different geological formations have been explored by surface examination, and some of the underlying mineral lodes have been examined by the aid of the diamond drill.

This work required months of careful work and considerable expense, but the data secured are now readily available, and it is believed will prove of great and increasing value. The recent improvement in the copper outlook has stimulated renewed inquiry regarding different tracts of land belonging to the company. The company has 200 parcels of land, all located on the so-called "Mineral Belt," and these extend over 100 miles from north to south.

The total expenditures during the year 1902, less interest, etc., amounted to $8,850.91. The cash balance in the treasury on January 1, 1903, was $83,856.12.

The officers of the Union Copper Land and Mining Company are as follows:

H. F. FAY, *President.*
GEO. G. ENDICOTT, *Secretary and Treasurer.*

Directors:

H. F. FAY,	GEO. G. ENDICOTT,
JOHN C. WATSON,	C. D. COFFIN,
ROGERS L. BARSTOW,	JAMES CHYNOWETH.

Office, 60 State Street, Boston.

PITTSBURGH AND HECLA DEVELOPMENT COMPANY.

This is a recently organized corporation, with a capital of $400,000, of which there is $100,000 in the treasury, but not for sale.

The property is located in Cochise County, Ariz. The company is sinking a two-compartment shaft about the centre of the property, and it is so arranged that it can be changed to either a three or four compartment shaft later on if desired.

In August, 1903, the shaft was down 150 feet and timbered 140 feet, and the management was pushing it with all possible haste and dispatch.

The top of Gold Hill for 300 feet has always been supposed to be an iron slag, so it is said, but an analysis made of a sample of it by the Pittsburgh Testing Laboratory shows that it contains:

Silica	3.86
Oxide of iron	10.86
Alumina	.51
Lime	19.45
Manganese di-oxide	44.72
With only	.015 phosphorus, no sulphur.

There are estimated to be 1,000,000 tons of this metal on the top of this hill. The company began its shaft about 300 feet south of the copper outcrop on the property. This copper outcrop is reported about 4,000 feet in length and about 600 feet in width, and a piece of the outcrop broken directly from the outcrop analyzes as follows: Silica, 10.06; alumina, .43; oxide of iron, 2.46; lime, 22.13; copper oxide, 29.12.

The company has purchased a steam hoisting outfit which will give them about 80 horsepower, and is arranged for a two-compartment shaft, having double drum, with 1,200 feet of rope on each drum. The company intends to drift at the 300-foot level, and then drift at each succeeding 100 feet down to 1,000 feet. A party of four owns 60 per cent of all the stock, and it is said the four people interested can raise ample funds for the development of the property.

William C. Temple is president of the Pittsburgh and Hecla Development Company. Office, 1,110 Farmers' Bank Building, Pittsburgh, Pa.

MISKWABIK DEVELOPMENT COMPANY.

This is a new corporation, but is still only a development company. It is understood to have a charter, but it is in the nature of a private close corporation owned and controlled by a few men at the Lake.

These parties have undertaken to develop the Kearsarge lode on some lands owned and controlled by themselves in Keweenaw County, Mich. Good reports have been heard of their findings, but authoritative information is not definite enough at present to say much regarding same. If the lode is found valuable on the lands referred to, it is possible, if not probable, that Mr. H. F. Fay may take the management of the company.

CENTRAL MINING COMPA

The Central is one of the old Lake Sup
Operations began in 1854, and the deposits fo
property, in the shape of mass and stamp c
abled the company to operate the mine with go
for years.

It became apparent in 1898 that the mine
opened could not longer yield a product whic
return adequate profit, and it was closed down
20, 1898. The mine is now flooded with water, a
only work doing at the property is that of explo
from the surface.

The Central Mining was organized with a capita
$500,000 in 20,000 shares of $25 each. The amount
in is $100,000. Sales of copper from beginning of op
tions to cessation of same realized $9,770,528.57. D
dends paid, $1,070,000. An assessment of $2 per s
was called, payable January 15, 1902, to liquidate the
debtedness then existing, and provide means for cont
ing exploration work by use of diamond drill.

Officers of the Company are:

JOSEPH E. GAY, *President.*
JOHN STANTON, *Treasurer.*

Office, 15 William Street, New York.

BLACK DIAMOND COPPER MINING COMPANY.

The company was organized in 1898 under the laws of [illegible] Virginia, with a capital of $2,000,000 in shares of $5

The mine is located about eighteen miles from Cochise [illegible]on, on the line of the Southern Pacific Railroad. The [illegible]ogical formation is a contact deposit between lime and [illegible]hyry. The ore occurs in masses, and in some places is [illegible] to be 30 feet and all of a sulphide character, principally [illegible]copyrite and bornite.

The company has a group of 30 claims developed by four tunnels, the lowest about 650 feet below the apex and each tunnel connected by winzes to one another. The Black Diamond has a smelting plant of 100 tons capacity, which was reported running smoothly until its water supply gave out. No doubt a proper water supply will be secured sufficient for requirements.

An aerial tramway of 600 tons daily capacity, 1½ miles in length, connects the mines with the smelter, about 800 feet below in the valley. Considerable ore is now available for smelter treatment, and the mine is reported looking well.

The President is E. D. Kennedy, of Warren, Ohio, and N. O. Bagge is Treasurer and Manager.

ROYAL GOLD AND COPPER COMPANY.

This company was incorporated in May, 1903, with a capital of $10,000,000 in 1,000,000 shares of $10 each, of which 700,000 shares are to remain in the treasury.

It is said that 200 mining claims constitute the property of the new company, located in Beaver County, Utah. The cost of the properties is stated as $1,000,000.

The following are the groups of mining claims reported as holdings of the Royal:

Montreal—Copper and gold.
Beacon—Copper, silver and lead.
Rebel—Silver and lead.
Atlas—Silver and lead.
Monitor—Gold, silver and lead.
Nellie—Silver, lead and copper.
Mammoth—Gold, silver and lead.
Red Warrior—Gold, silver and lead.
Florence—Gold, silver and lead.
Twins—Gold, silver and lead.
Lady Bryan—Gold, silver and lead.
Highland Boy—Gold, silver and lead.
Lewis—Copper and iron.
Little Marie—Silver and lead.
Adams and Muldoon Groups (in Washington County)—Copper and gold.
Gogebic—Copper, gold and silver.
Colossal—Copper, gold and silver.
Marengo—Gold, silver and lead.

The Montreal group is reported to have cost the company $160,000. The gold-silver-lead properties in the Star district are said to have produced from surface workings, by crude methods, over $1,000,000 worth of ore. The credit for the organization of this great company is given to Senator A. B. Lewis, of Utah, who succeeded in acquiring this string of properties and drawing together a strong combination of Eastern capital to provide the money for their purchase, development and equipment. It is said that the erection of a thousand-ton smelter and a large concentrating plant is among the plans of the new organization.

The officers of the Royal Gold and Copper Company are:

SENATOR A. B. LEWIS, *President.*
C. J. CAUGHEY, *Vice-President.*
FRANK KNOX, *Treasurer.*
JOSEPH HENSHAW, *Secretary.*

Main Office, Salt Lake City, Utah.

CORONADO MINING COMPANY.

The property consists of 29 claims and fractions, and contains about 400 acres. The development work is progressing very satisfactorily. A shaft has been sunk 150 feet and tunnels driven about 1,000 feet during the last year, and high grade ores are being shipped to the smelter at Clifton. The mine is being actively worked with a force of forty men.

The company is capitalized for $3,000,000; 300,000 shares; par value, $10.

The officers of the Company are:

WM. B. THOMPSON, Boston, Mass., *President.*
J. W. HAZEN, Boston, Mass., *Treasurer.*
W. J. PALMER, Boston, Mass., *Secretary.*

Directors:

WM. B. THOMPSON, Boston, Mass.
J. W. HAZEN, Boston, Mass.
JOHN W. BELCHES, Boston, Mass.
JOHN K. ERSKINE, JR., New York City.
GEORGE C. GILL, Holyoke, Mass.

Office, 10 Post Office Square, Boston.

BULLY HILL COPPER MINING AND SMELTING COMPANY.

This company has been incorporated under the laws of the State of New Jersey, with an authorized capital of $2,500,000 in 100,000 shares of $25 each.

The property is located in Shasta County, California. In the Bully Hill section, the "copper belt," as it is called, is about two miles wide. This means that indications of copper have been found over an area of that width. Only a small part of this area, however, has been developed, and in the explored district the Bully Hill mine is located.

The De Lamar smelter was blown in during May, 1901, and since then it is stated that the bullion produced has paid for the mine and smelter several times over. It is said that this smelter treats about 6,000 tons of ore per month.

MANASSAS-GAP COPPER-MINES.

This company is incorporated under the laws of the State of New York, with an authorized capital of $1,000,000, divided into 1,000,000 shares of the par value of $1 each. There are outstanding 630,000 shares, and of the balance of 370,000 shares treasury stock 200,000 were offered in July, 1903, at 25 cents per share for development.

The property of the company consists of 700 acres of land in Fauquier County, Va., where the mines are located. There are three main shafts and a drift of 180 feet. The ores are said to be chalcopyrite and bornite, and carry some gold and silver. Until February 15, 1903, the property was known as the Carter Copper Company, but on the date named its corporate title was changed to Manassas-Gap Copper-Mines. Office of the company is at 25 Broad Street, New York.

MARKEEN COPPER COMPANY.

The Markeen Copper Company was organized under the laws of West Virginia in 1899, with a capital of $1,000,000, divided into 100,000 shares of the par value of $10 each. The company's property is located in the Greenlee Gold Mountain District, Graham County, Ariz.

The officers are as follows:

THOMAS A. LEE, *President and Treasurer.*
ALFRED P. STEVENSON, *Vice-President.*
THOMAS E. WARMAN, *Secretary.*
LEOPOLD BALBACH, *General Manager.*

Transfer Office, 66 Broadway, New York.
Registrar, United States Mortgage and Trust Company, New York.

WYANDOT COPPER COMPANY.

This company was organized under the laws of the State of Michigan in 1899, with a capital stock of $2,500,000, divided into 100,000 shares of $25 each. There has been paid in $800,000 on the capital stock.

Recent exploratory work has been carried on by the use of diamond drills. In using the drills the management came upon what is known as the eastern sandstone formation, which was found in the Champion and Trimountain mines to adjoin their lodes. The company is therefore sinking a shaft at what is considered the proper distance from this formation, and the intention is to continue it to a considerable depth and cross cut from that point, when it is expected it will be known conclusively whether or not the vein is on that part of the property. Indications were considered favorable, but several months will be required to determine the value of the property at this point. The end of February, 1903, found the treasury with $60,000 on hand, which was considered sufficient to last for a year or two without assessment. There are 1,040 acres in the property, which is now in touch with the Copper Range Railroad.

Up to October, 1903, the cross-cut east was reported to have penetrated two amygdaloid belts, but has failed thus far to locate the Baltic lode.

The officers of the Company are as follows:

HENRY STACKPOLE, *President.*
WILLIAM O. GAY, *Treasurer.*

Directors:

HENRY STACKPOLE, WILLIAM O. GAY,
IRVING J. STURGIS, JOSEPH DORR,
M. VAN ORDEN.

The offices of the Company are at 24 Congress Street, Boston.

HIGGINS DEVELOPMENT COMPANY.

The Higgins Development Company is a recently organized company to carry on mining operations in Arizona. The property consists of ten patented claims, viz.: the Aurora, Al Hassan, Webster, Twilight, Yakima, Black Prince, Back Bone, Contact, Soudan and Trotter, comprising a total of 180 acres. The Higgins Development Company is capitalized at $500,000, divided into 50,000 shares of $10 each, $5 of which has been paid in.

Development work done by the former owner, Mr. Thomas Higgins, consisted of about 1,000 feet of tunnel work. The work started by the present company consists of a shaft located on the east end of the Webster claim, and sinking a winze in the upper tunnel on the Twilight claim. The former work is being prosecuted with the idea of cutting the known ore bodies coming from the Copper Queen, and the winze in the upper tunnel is to open a carbonate ore body which experts expect to find at a depth of from 100 to 200 feet. The shaft and winze have been started recently, and therefore have not attained much depth. There was a full equipment, timber, etc., on the ground in June, 1903, and work is expected to be prosecuted without interruption.

The claims adjoining the Higgins group have been productive in copper values, and the consensus of opinion is very favorable to a quick exposure of ore bodies on the property of the Higgins Development Company, not only from work done on the adjacent property of the Copper Queen, but rather owing to the fact of the fine surface indications on this property.

An expert analysis of the Bisbee district in Arizona describes it as a broken saucer, with the porphyritic outcrop on the north and northwest rising like a wall to guard the broken side, and the rest stretching away to the west, southwest and south, with the ore deposits growing deeper and deeper with distance from the contact with the porphyry. The Higgins property is located where it is believed rich ore bodies will be uncovered as the work of exploration and development proceeds.

An assessment was called in November, 1903, of $1 per share, payable in two installments, as follows: 50 cents per share on November 25, 1903; 50 cents per share on January 25, 1904. A three compartment shaft has been sunk to the depth of 300 feet.

COLUSA PARROT MINING COMPANY.

The mines operated by the Colusa Parrot Mining Company in 1902 were the Original and East and West Stewart. Senator W. A. Clark is the owner of these properties, located in Butte, Mont. The number of men employed at these mines last year was 615.

The shaft of the Original Mine is down 1,400 feet, 100 feet of which was sunk in 1902. The shaft is two compartment. The hoisting is done by an Allis engine having an 18 by 16 inch cylinder and a round 1¼-inch rope. A new steel gallows frame is at this mine.

The East Stewart Mine has a three-compartment shaft which has been sunk 1,300 feet on an incline of 74 degrees. The steel gallows frame erected at this mine is 120 feet high.

The West Stewart Mine has a main shaft 1,100 feet deep, 650 feet of which was sunk in 1902. New machinery is to be erected at this mine, and the gallows frame recently set up is 120 feet high. The above mines are all connected with other properties and are well ventilated.

MOUNTAIN COPPER COMPANY, LIMITED.

This company operates extensively in California, but during a considerable part of 1902 production was curtailed, owing to fire at the property and a protracted strike of the miners and smelter men.

The report for 1902 states that 139,903 tons of ore were extracted, 149,787 tons smelted at the Keswick Works, and 7,854 tons of copper in Bessemer bars produced. This was refined in New Jersey, the output of refined copper being 8,739 tons. Sales for delivery were 7,822 tons. The output of the Keswick smelter in 1901 was 13,271 tons of copper.

Profits for the year 1902 were returned at $551,695, and after providing for debenture interest of $300,000 there remained $251,695.

The office of the company is 3 Lombard Street, London. The American representatives are Vivian Bond & Co., New York.

ARIZONA COMMERCIAL COMPANY.

This company was organized in 1882, under the laws of the State of New York, with a capital of $1,000,000, divided into 100,000 shares of $10 each, full paid and non-assessable. There are 86,960 shares outstanding and 13,040 shares in the company's treasury.

The Arizona Commercial Company's property is officially reported to consist of the following mining claims: Copper Hill, Defiance and Black Hawk, situated in Globe, Ariz., at the terminus of the Gila Valley, Globe & Northern Railroad; also a mill site of ten acres, about one and three-quarter miles from the above properties, situated on Pinal Creek, where an abundance of water is to be had at all seasons of the year. In addition to the above, the company has acquired, on favorable terms, a lease and bond on several adjoining claims, known as the Metamora Group. The directors reported the company free from debt on January 31, 1903.

Previous to the year 1900 no attempt had been made to develop this property. Since operations began it is said $100,000 and over has been expended upon the development of the property and for machinery and equipment.

The main shaft on the property is a perpendicular, double-compartment shaft which has been sunk to a depth of 615 feet. Drifting has been done on most of the levels. The ore found on the different levels is sulphide, and the superintendent reported that there was enough concentrating ore to run a concentrating plant with a capacity of 100 tons per day for over a year.

The directors voted on December 12, 1902, to sell the treasury stock of the company, amounting to 13,040 shares, at $6 per share, to provide funds for concentrating mill, smelter and railroad. It was said that subscriptions had been received for a large part of the stock offered from several of the directors and some of the larger stockholders of the company. Expert reports have been made on the property, and these are of an encouraging nature.

It was said in October, 1903, that it was decided to shut down the mine temporarily.

The officers of the Company are:

SIGOURNEY W. FAY, *President.*
JAMES H. FAY, *Secretary and Treasurer.*

Directors:

SIGOURNEY W. FAY,	N. L. AMSTER,
JAMES H. FAY,	L. E. WHICHER,
FREDERICK FARNSWORTH,	J. LIBERMAN.

Transfer Office, 30 Broad Street, New York.

MASS CONSOLIDATED MINING COMPANY.

The product of this company during the calendar year 1902 was 3,273,835 pounds of mineral, which yielded 2,345,805 pounds of fine copper. There were hoisted from the mine last year 203,769 tons of rock, and 152,562¾ tons were stamped.

Operations were carried on in 1902 at shafts "A," "B" and "C." The total sinking at these shafts last year amounted to 681 feet, and extensions of drifts on lodes were also made.

Several copper bearing lodes are found on the company's property, and good values were reported at the openings.

Work done last year was on the Evergreen, Butler and Knowlton lodes. The total new openings in 1902, including sinking of shafts, drifting on lodes and cross cuts, amounted to 4,740 feet.

The company has a stamp mill, 90 by 210 feet, constructed of steel and equipped with two heads of stamps.

Statement of assets and liabilities of the Mass Consolidated Mining Company, exclusive of mine, plant and supplies in use January 1, 1903:

Assets.

Cash, assessments, receivables and copper on hand	**$184,321.60**
Supplies on hand at mine and mill	**43,837.84**
Townsite	**12,197.13**
Second instalment Assessment No. 5, due April 1, 1903	**99,823.00**
Total assets	**$340,179.57**

Liabilities.

Accounts payable at mine	**$67,029.63**	
Pay roll, payable at mine	**18,825.58**	
Payable at Boston	**55,306.13**	
		141,161.34
Balance of assets		**$199,018.23**

In March, 1903, an approximate report made at the annual meeting showed total assets of about $271,538 and total liabilities, including March pay roll, $83.451; balance of assets, $188,087.

The output of the Mass mine for the first eight months of this year is estimated as follows, in tons of refined copper:

1903.	Tons, Copper.
January	105
February	123
March	110
April	110
May	125
June	110
July	175
August	135
Total	993

Officers of the Mass Consolidated Mining Company are:

CHAS. A. LAMB, *President.*
W. A. BANCROFT, *Treasurer.*
Office, 6 Beacon Street, Boston.

Capital $2,500,000, divided into 100,000 shares of $25 each.

THE GRANBY CONSOLIDATED MINING, SMELTING AND POWER COMPANY, LIMITED.

This company was incorporated March 29, 1901, under special act of Legislature of the Province of British Columbia.

The company was organized for the purpose of mining and smelting ores and bullion and creating power.

The capital stock authorized is 1,500,000 shares of the par value of $10 per share. There are 1,336,303 shares of the capital stock issued, and the latter was listed on the Boston Stock Exchange April 22, 1903. The stock is non-assessable.

The company's condensed general balance sheet as of January 31, 1903, is given as follows:

Assets.

Mines and Mineral Claims:		
338.89 acres mineral lands		$12,674,506.68
Plant and Equipment:		
Mine plant at Phœnix, B. C.	$218,241.96	
Power plant on Kettle River	240,816.16	
Smelting and converting plant at Grand Forks, B. C.	455,430.13	
		914,488.25
Real Estate and Lands:		
Lime land, 61 acres	$1,545.81	
Lands surrounding smelter, 540 acres	12,851.70	
Fifty-nine lots in city of Grand Forks	2,950.00	
Two hundred and eighty lots in city of Phœnix	28,000.00	
Lands at Carson, B. C., 500 acres	24,478.19	
Granby Hotel, Phœnix, B. C.	25,606.06	
Ironsides Hotel, Phœnix, B. C.	4,988.64	
Twenty cottages, Phœnix, B. C.	23,027.10	
		123,447.50
Stocks and Bonds:		
Grand Forks street debentures		1,501.22
Accounts and bills receivable		24,126.45
Ores on Hand at Cost:		
Company ores at smelter, 4,715 tons	$8,251.20	
Freight on same	1,494.80	
Custom ores, 1,042 tons	7,375.33	
Custom matte, 52 tons	5,670.14	
Company matte, 20 tons	2,650.00	
Copper awaiting shipment, 11 tons	3,509.00	
Copper in transit, 1,724 tons	589,608.00	
Furnace bottoms and flue dust	86,164.80	
Ore at mine awaiting shipment, 27,000 tons	27,000.00	
		731,723.27
Inventory Supplies:		
Smelter store	$56,088.46	
Mine store	44,120.15	
Coke on hand and in transit	14.139.00	
		114,347.61
Unexpired insurance premiums		2,000.00
Montreal office fund and furniture		805.63
New York office fund and furniture		603.00
		$14,587,549.31

Liabilities.

Capital stock		$13,363.030.00
Accounts and Bills Payable:		
Drafts outstanding drawn on copper in transit	$501,434.00	
Accrued interest	9,639.00	
Unpaid 10 per cent on matte contracts	12,156.29	
Unpaid machinery contracts	19,795.00	
Unpaid January pay rolls	53,255.32	
Unpaid accounts for supplies and coke	39,375.05	
		635,654.66
Cash, overdrawn account		24,929.97
Surplus		563,934.98
		$14,587,549.61

The annual meeting of the Granby Consolidated Mining, Smelting and Power Company was held in Montreal in October, 1903, and was largely attended.

The directors' report stated that the business for the fiscal year ending June 30, 1903, was greatly hampered by the difficulties existing in the coal and coke situation, which necessitated the running of the smelter plant to only one-half of its capacity. The plant has now been increased by two furnaces, making six in all, which they expect to operate full time from now on, as against an average of two furnaces last year.

Production for the year aggregated 12,551,000 pounds copper, 277,574 ounces silver and 35,121 ounces gold. The company soon expects to add two furnaces to their plant, making six in all.

Receipts from real estate amounted to $38,511, making total receipts $2,271,252.

The income account follows:

Gross receipts		$2,271,252
Expenses at mines and smelters	$1,136,000	
Foreign ore purchased	72,954	
Foreign matte purchased	766,000	
		1,974,954
Net profit		$296,298
Previous surplus		398,000
Total surplus		$694,298

The assets, cost of land, real estate, machinery, buildings, dwellings, equipment, etc., are placed in the balance sheet at $13,845,000, copper in transit and cash on hand $79,000, store supplies $93,000, accounts and bills receivable $55,000, making the total assets $14,174,000.

Mr. John Stanton, who returned East in June, 1903, after inspecting the Granby property in British Columbia, says: "The Granby ore body is the largest sulphide ore deposit I have ever examined, and my mining experience has extended to every variety of copper ore. It is analogous to the famous Rio Tinto of Spain. The Granby ore is lower in copper, but carries larger values in gold and silver. It is larger than the famous Tennessee deposit. Hitherto sulphide ore bodies from 40 to 80 feet wide have been considered large, but the one at Phoenix eclipses anything I have ever inspected. I don't know of its equal on the continent. The millions of tons of ore in sight and the vast stopes proved a veritable revelation to me, and the smelter at Grand Forks is up to date in every respect.

"I believe the Granby can operate at a profit with copper at 11c. per pound or less. With that corporation it is only a question of increasing or diminishing profit. I think the

Granby, with the advantage of gold and silver in its ores, can produce copper at a price that would put less favored mines out of business. Certain Michigan mines now operating at a profit would be compelled to close down if copper fell below 11 cents. The Granby has not yet begun to extract ore on as large a scale as it should. When the capacity of the smelter is increased copper will be produced at a much lower figure. I think I am well within the mark when I state that it is practicable for the Granby to produce and market the metal at a cost of seven cents per pound, and possibly lower. There are very few mines that could do likewise."

The officers of the Granby Consolidated Mining, Smelting and Power Company, Limited, are:

S. H. C. MINER, *President.*
JAY P. GRAVES, *Vice-President.*
J. W. WOOSTER, *Treasurer.*
R. R. MACAULAY, *Secretary.*

Directors.

S. H. C. MINER,
A. C. FLUMERFELT,
J. H. M'KECHNIE,
A. L. WHITE,
JOHN STANTON,
GEORGE M. LUTHER,
JAY P. GRAVES,
W. H. ROBINSON,
FAYETTE BROWN,
W. H. NICHOLS,
JACOB LANGELOTH,
C. S. HOUGHTON.

Principal office, 62 Canada Life Building, Montreal, Quebec.

Transfer Agent, American Loan and Trust Company, Boston.

Place of Registration, Boston Safe Deposit and Trust Company, Boston.

ARCADIAN COPPER COMPANY.

This company has an extensive territory, and after the organization a few years ago started out to develop the property for quick and large results. The equipment and openings were all designed for handling a large production. As developments progressed, however, and time passed, returns from the mine were disappointing, and the quality of rock hoisted did not show the copper contents necessary to make a highly successful mine financially.

The belief has been expressed, however, that improved values may be encountered at greater depths, and the expectation is that the most promising shafts will be sunk deeper. Recent work was at the Douglas shaft, and daily shipments of rock to mill amounted not a great while ago to about 250 tons. The rock taken from the mine this spring was reported at less than 1 per cent mineral, and the refined copper produced was running from 12 to 14 pounds. Sometimes blocks of high-grade rock were found, but these finds did not hold out. Much of the best machinery has been transferred to the Trimountain Company.

Later advices report mining completely suspended. Diamond drill explorations continue.

The company was organized under the laws of the State of New Jersey in March, 1899, with a capital of $3,750,000, divided into 150,000 shares of $25 each.

The officers of the Arcadian Copper Company are:

ALBERT C. BURRAGE, *President.*
SIDNEY CHASE, *Vice-President.*
CHARLES D. BURRAGE, *Secretary and Treasurer.*

Directors:

ALBERT C. BURRAGE,
WM. G. ROCKEFELLER,
SIDNEY CHASE,
CHARLES D. BURRAGE,
H. H. ROGERS,
W. A. PAINE,
C. M. KING,
N. F. LEOPOLD,
H. G. FOREMAN.

Office, 24 West Street, Boston.

AHMEEK MINING COMPANY.

This company has a capital of $1,250,000, divided into 50,000 shares of $25 each. The property consists of 920 acres, being land set off from the extensive tract owned by the Seneca Mining Company in March, 1880, and located in Keweenaw County, Michigan. A couple of shafts were sunk years ago, but they did not go deep enough to prove the value of the underlying lodes.

Several months ago the company started a vertical exploratory shaft in search of the Kearsarge amygdaloid lode, and early in 1903 the Ahmeek struck the lode in the vertical drill hole from the bottom of the small vertical shaft at a depth of 214 feet. A cross cut was started later to intersect the lode to the east from the bottom of the shaft at a depth of 100 feet, and success has attended the attempt. After cross-cutting east for a considerable distance the management found a falling off in the ledge and retreated, carrying the exploration 137 feet west. The cross cut was in copper formation for 20 feet before the main lode was cut. The lode was cut early in June, 1903, and the vein penetrated for a distance of 10 feet without signs of finding the hanging wall.

The Mohawk Mine is to the north of the Ahmeek property and the Kearsarge to the south, and both of these mines being of demonstrated value there is great interest centred in the Allouez property. Considerable of the Ahmeek land is low ground and lower than the surrounding country, and this fact partly explains the finding of the lode so near the surface. Drifts have been opened up for 150 feet on the Kearsarge lode at this property. The showing is excellent, and as developments have progressed there has been some talk relating to the consolidation of the Ahmeek with the Seneca. A permanent shaft has been started at Ahmeek, while site for a second one is being staked out. The lode has been drifted upon for a considerable distance, and excellent stamp deposits exposed.

The officers of the Ahmeek Mining Company are:

A. S. BIGELOW, ***President.***
W. J. LADD, ***Secretary.***

Office, 199 Washington Street, **Boston.**

CALUMET AND PITTSBURG DEVELOPMENT COMPANY.

This is a recently organized company, incorporated under the laws of Arizona, with 40,000 shares of par value of $10 per share, capital authorized and issued. Property consists of one claim owned in fee, and nineteen claims held under option. The property is located about one mile east of Bisbee, in the Warren district, Arizona. The object of the company is to develop the property and prove whether or not it contains mineral value enough to make a mine.

The officers of the Calumet and Pittsburg Development Company are:

CHARLES BRIGGS, *President.*
JOHN S. DYMOCK, *Vice-President.*
PETER RUPPE, *Treasurer.*
GORDON R. CAMPBELL, *Secretary and Counsel.*
JAMES E. FISHER, *Assistant Secretary.*

Directors:

CHARLES BRIGGS,	PETER RUPPE,
JOHN S. DYMOCK,	GEORGE E. TENER,
JAMES HOATSON,	CHESTER A. CONGDON,
THOMAS HOATSON,	T. F. COLE,

CHARLES D'AUTREMONT.

Mine Offices located at Bisbee, Ariz.

General Offices, Calumet, Mich.

DALY WEST MINING COMPANY.

This company has a capital stock of $3,600,000, divided into 180,000 shares of $20 each. The company was reincorporated under the laws of the State of Colorado in 1902, and the capitalization increased from 150,000 to 180,000 shares, the extra 30,000 shares being used for the purchase of the properties of the Quincy Mining Company located in Utah.

The Daly West properties are located near Park City, Utah, and produce silver, lead, copper and gold. During the year ending December 31, 1902, the production of the various metals from the company's mines was as follows: Copper, 2,403,670 pounds; lead, 29,806,750 pounds; gold, 2,943.96 ounces; silver, 3,575,796 ounces, and zinc, 19,477,443 pounds. This product was derived from 65,363 dry tons of ore, concentrates and oxides, and the entire output sold for $1,827,585.72.

Dividends paid by the company in 1902 were $1,044,000. Total dividends to the end of 1902 amount to $2,259,000. Cash on hand December 31, 1902, was $255,516.13.

The company has distributed for the first eleven months of 1903 in dividends the sum of $1,125,000. The most recent advices from the property are of a very favorable nature.

Officers of the Daly West Mining Company are:

J. E. BAMBERGER, *President.*
W. S. McCORMICK, *Treasurer.*
J. BARNETT, *Secretary.*
J. A. KIRBY, *General Superintendent.*
F. W. SHERMAN, *Mill Superintendent.*
Office, Salt Lake City, Utah.

BRITISH COLUMBIA COPPER COMPANY, LIMITED.

The authorized capital of this company is $2,000,000, divided into 400,000 shares of $5 each, fully paid and non-assessable. There are issued 256,500 shares at $5 each = $1,282,500, leaving unissued in the treasury 143,500 shares at $5 each = $717,500.

The mines of the British Columbia Copper Company, Limited, are located in Deadwood Camp, Kettle River Mining Division, Yale District, British Columbia. The smelter is four miles distant, connected by a spur of the Canadian Pacific Railway. The main line of the Canadian Pacific Railway runs to the smelter at Greenwood.

The mining property consists of six claims with a total acreage of 80 11-100 acres. There are four shafts on the property. From the main shaft, levels have been run which developed the ore body to 500 feet in depth. The three other shafts along the strike of the ore are 200 feet in depth, each of which is now being used as chutes for open quarry work, and the bulk of the mining at present (July, 1903) is being done from these open quarries.

At the smelter two blast furnaces 42 by 150 inches are in operation, having a capacity of 700 to 800 tons per day. At the present writing the machinery for a converting plant is in course of construction.

The production of the British Columbia Company for the calendar year 1902 was 3,131,130 pounds of copper, 40,584.11 ounces of silver and $146,931.98 in gold.

For the first six months of 1903, of which time the works were closed down during part of February, March and April through a coal and coke strike at Fernie, B. C., from which source the company was entirely dependent for coal and coke, the production was as follows:

First six months, 1903.

Copper, pounds	1,281,721
Silver, ounces	14,575 175-1000
Gold	$63,195.50

At the mine there are the necessary hoisting machinery, air compressors and ore crushers. When the new converting plant is completed the company will be able to make a 98 per cent blister copper instead of a 45 per cent matte. The installation of this plant will result in a considerable saving in shipments.

The aggregate production for the months of July, August, September and October, 1903, was as follows: Copper, 1,418,016 pounds; silver, 16,361 ounces; gold 4,283 ounces.

The new converter is expected to be in operation by April, 1904. The company is making arrangements to run its reduction plant with electrical power.

Financial Statement.

The British Columbia Copper Company, Limited.

At Close of Business, November 30, 1902.

Assets.

Mining property, mine and smelter buildings, machinery and fixtures, real estate, etc.	$1,554,039.02	
Less depreciation	294,039.02	
		$1,260,000.00

Treasury stock		$39,545.00
Greenwood City bonds	$3,600.00	
Accounts receivable	14,216.83	
Cash balance	8,734.47	
Finished product, ore, supplies, etc., on hand	57,641.63	
		84,192.93
		$1,383,737.93

Liabilities.

Capital stock	$1,250,000.00	
Accounts payable	130,137.93	
Bills payable	3,600.00	
		$1,383,737.93

Officers of the British Columbia Copper Company, Limited, are:

F. L. UNDERWOOD, *President.*
F. L. SOMMER, *Vice-President.*
C. E. LAIDLAW, *Treasurer.*
R. H. EGGLESTON, *Secretary.*

Directors:

P. G. BARTLETT,
J. D. KERNAN,
C. H. ROPES,
F. L. SOMMER,
R. H. EGGLESTON,
C. E. LAIDLAW,
W. H. THOMAS,
C. A. STARBUCK,
F. L. UNDERWOOD.

Office, 31 Nassau Street, New York.

ELM RIVER COPPER COMPANY.

The property of this company consists of over 2,300 acres of mineral land, located in about the centre of the Copper Range. Work has been prosecuted by trenches, pits, shafts, drifts and cross cuts. A number of mineralized lodes have been located, and attention has been given to the most promising of these.

The company has opened two shafts on what it believes is the same lode as that being developed at the Winona Mine, and it has intercepted the lode at another point, 250 feet below the surface, by a cross cut from a shaft which had been sunk on another formation to the east. The lode was found to be 20 feet wide, and gave good indications of commercial value.

If future developments should prove that the so-called Winona lode is an extension of the Baltic lode, the prospects for the Elm River Company will be enhanced. Operations recently have been confined to the one lode, and as it outcrops on the property for a distance of three miles there is plenty of scope for developments to prove its value.

The Elm River Copper Company was organized in 1899 under the laws of the State of New Jersey, with a capital stock of $1,200,000, divided into 100,000 shares of $12 each.

The mine is well equipped with all the buildings, machinery and appliances necessary to carry on the work in hand. Since operations began over 5,000 feet have been more or less thoroughly explored, and about 5,000 feet of diamond-drill work done. On January 1, 1903, the company had a cash balance of $259,000.

Officers of the Elm River Copper Company are:

H. F. FAY, *President.*
GEO. G. ENDICOTT, *Secretary and Treasurer.*

Directors:

H. F. FAY,
STEPHEN R. DOW.
JOHN C. WATSON,
GEO. G. ENDICOTT.
CHAS. N. KING.

Office, 60 State Street, Boston.

CERRO DE PASCO MINING COMPANY.

The Cerro de Pasco mine is located in Peru, at an altitude of about 15,000 feet. It was discovered in the year 1630 and operated in a crude way by Indian labor for its silver deposits. During the long period of 270 years vast quantities of ore were taken from the great quarrylike workings, where the most primitive methods were resorted to for obtaining the mineral riches found there.

The early operators mined for silver, but it was discovered during comparatively recent years that a great copper zone existed beneath the silver-bearing ore where the deposits averaged 25 per cent. in copper, besides containing gold and silver values. It became apparent that here was a chance to develop a large mine if equipped with modern machinery and operated according to up-to-date methods.

The attention of Mr. J. B. Haggin was enlisted in these mines, and he and his associates acquired them. Expert talent was employed to arrange for their purchase, and this having been accomplished the new owners are now engaged in developing the property. Expectations have run high regarding the future of the Cerro de Pasco mine, and within a few years, if not sooner, the ability of this South American producer will be demonstrated. A new smelter is to be erected for treating the ores, and bids for the necessary machinery and apparatus were recently under consideration.

UNITED STATES EXPORTS OF COPPER.

First Seven Months, 1903.

Ingots, Bars, etc., lbs.:—	First seven months, 1903.	First seven months, 1902.	First seven months, 1901.
To United Kingdom	25,490,282	71,269,185	22,535,118
" Belgium	3.004,728	5,702,810	2,988,592
" France	28,274,310	38,487,139	22,627,041
" Germany	36,478,096	33,679,688	20,961.403
" Italy	3,739,711	4,706,664	3,539,829
" Netherlands	50,318,044	57,743,175	38,215,694
" Other Europe	13,180,367	15,959,340	8,153.939
" British N. America	1,271,397	1,497,895	908,866
" Mexico	84,320	157,127	165,328
" Other countries	60,760	63,463	382,187
Total Ingots, Bars, etc.	161,902,015	229,266,486	120,477,997
Matte, tons:—			
To United Kingdom	318	4,960	6,047
" Germany	....	....	25
" Mexico	6,350	7,023	1,453
" Other countries	495	....	226
Total Matte	7,163	11,983	7,751
Aggregate value	$22,004,328	$29,291,655	$20,803,599

ALASKA AS A SOURCE OF COPPER SUPPLY.

The United States Government purchased Alaska from Russia in 1867 for $7,200,000, and many millions of dollars in gold and silver have been secured in the "Klondike" region during the last few years. Alaska embraces about 550,000 square miles, and in this great territory there are not only rich deposits of the precious metals, but in certain portions there are also said to be enormous quantities of copper deposits.

These copper deposits are found in the Copper River country contiguous to the Kuskokwim River. In this section of Alaska the most promising copper deposits are located about 150 miles inland, and in the absence of railroad facilities they are practically unavailable. It will take time to tell what commercial values copper mining in Alaska will develop. A copper mine has been opened on an island in Prince William Sound, and some rich copper ore has been shipped to market. There are some promising copper deposits on Prince of Wales Island, and as they are located nearer navigable waters it is probable important developments may occur there before very long. Some native copper has been found in the locality of the Noatok River. The climatic conditions make Alaska a hard country to live in during a good part of the year, and operations there must be conducted under serious drawbacks.

LAKE SUPERIOR AND PITTSBURG DEVELOPMENT COMPANY.

This company is one of the recently organized Arizona properties. It has been incorporated under the laws of Arizona with a capital of 40,000 shares having a par value of $10 each, all issued.

The company owns fee to three claims, and holds options on forty-one additional claims. The property is located about one and one-half miles south of Bisbee, in the Warren mining district. The intention is to develop the property and explore it for mineral deposits.

The officers of the company are:

CHARLES BRIGGS, *President.*
JOHN S. DYMOCK, *Vice-President.*
PETER RUPPE, *Treasurer.*
GORDON R. CAMPBELL, *Secretary and Counsel.*
JAMES E. FISHER, *Assistant Secretary.*
Office, Calumet, Mich.

PITTSBURG AND DULUTH DEVELOPMENT COMPANY.

Incorporated under the laws of Arizona with a capital of 50,000 shares of the par value of $15 each. The company holds options on sixteen mining claims adjoining Calumet & Arizona and Lake Superior and Pittsburg properties. The object is to develop the property and open it up as a mine if found to have the necessary mineral deposits. Officers are the same as those of the Lake Superior and Pittsburg Development Company.

JUNCTION DEVELOPMENT COMPANY.

This company is one of the new Arizona organizations. It holds options on about twenty mining claims adjoining the Calumet and Pittsburg property, and located north and east of same. It is incorporated under the laws of Arizona, with a capital of 50,000 shares of the par value of $15 each. Officers are the same as those of the Calumet and Pittsburg Development Company.

HELVETIA COPPER COMPANY.

This company is organized under the laws of the State of New Jersey, with a capital stock of $5,000,000, divided into 200,000 shares of $25 each. The property consists of many claims, located in Arizona, about thirty-one miles southwest of Tucson. A smelter was built and treatment of ore begun, but for some reason or other operations have been suspended for over a year past, and nothing has been done since.

TECUMSEH COPPER COMPANY.

The Tecumseh Mine is located in Michigan, and has several lodes on its property. The territory comprises ample ground for mining, but lately operations were suspended, as results hitherto were not such as to inspire enthusiasm. The company is capitalized at $2,500,000, divided into 100,000 shares of $25 each. Office, 15 Congress Street, Boston.

ARNOLD MINING COMPANY.

Since the consolidation of this company with the Copper Falls Mining Company in January, 1898, the capital stock has been increased to $2,500,000, divided into 100,000 shares of $25 each. The issue of the additional 40,000 shares was made discretionary with the directors.

The company owns an extensive tract of land in the Michigan copper district, but in the recent past little development work has been done at the property.

The office of the company is at 50 State Street, Boston.

MOCTEZUMA COPPER COMPANY.

This company operates mines in Mexico, and although a comparatively new producer on an important scale, the output during 1902 reached 9,584,099 pounds of fine copper. It is one of Phelps, Dodge & Co.'s properties, and is therefore under the management of experienced and able operators.

The works are located at Nacozari, Sonora, Mexico. There are two furnaces and two converters, and a narrow-gauge railway a few miles in length connects the mines with the smelter. The smelter has two wrought-iron smelting jackets 42 by 130 inches, of the Copper Queen type. Other necessary up-to-date modern equipment is in place for economical and successful work.

The production of the company for the first half of 1903 amounted to 4,847,453 pounds of black copper reckoned at 99 per cent fine.

The total production of the Moctezuma Copper Co. during the four months of July, August, September and October, 1903, in black copper 99% fine was 3,590,795 pounds.

Officers of the Moctezuma Copper Company are:

J. DOUGLAS, *President.*
G. NOTMAN, *Secretary and Treasurer.*
Office, 99 John Street, New York.

GEORGE A. TREADWELL MINING COMPANY.

This company has a capital stock of $3,000,000, divided into 300,000 shares at the par value of $10 each. The organization was effected in 1899, under the laws of West Virginia.

The company owns the Cliff, Brookshire, Badger, Pastime, Crystal and Crystal Placer, Aqua Fria, Wallace and Iron Queen group of mines, situated on the Verde Belt and in the Big Bug District, in Yavapai County, Arizona.

The property is located in the Verde District, on the east slope of the Black Hills and in the great United Verde copper belt about midway between the United Verde mines and the Equator Hill, and in all the company owns nearly one hundred mining claims and from 1,700 to 1,800 acres.

The geological formation of the ore-bearing bodies in general may be called one of vertical slate with numerous intrusive dikes and masses of diorite thrust up through bedded deposits of limestone and sandstone which are in place from the bottom of the Verde Valley to the top of the Black Hills. The general strike of the formation is east and west, with a dip of about 80 degrees to the south. Many variations, however, from this general rule may be noted.

The company is named after Professor George A. Treadwell, who is a well known geologist and metallurgist and intimately identified with Arizona mining for many years.

Since the organization of the company development work has been vigorously pursued, and the total amount of underground work—shafts and drifts—done on the property is something in excess of a mile and a half. In the Iron Queen Mine 40,000 tons of ore have been surrounded and blocked out ready to take down. There are also several thousand tons of ore on the dump. The ore is officially said to average 8 per cent in copper and $10 a ton in gold. The ore below the water level is a sulphide, and in the Iron Queen and some of the mines is practically free from silica, so that silicate ores can be used as a flux.

The company has a hydrocarbon smelter completed, proved successful on its trial run and ready to operate. The claim for this invention is that the ore can be smelted in motion. A stream of ore and a stream of flame come together, and as the ore is melted it flows along in its liquid state. In this furnace, as soon as heat has been applied to a piece of ore long enough to melt it, that ore passes on in its liquid form and another solid piece of ore takes its place, so that the heat is always doing duty and is not wasted upon dead slag after the reduction of the ore has been accomplished. It is estimated that at least 50 per cent of the fuel, whether oil or coal, can be saved by this process over other methods. The George A. Treadwell Mining Company is the owner of half the stock of the Hydro-Carbon Smelting Company.

The company has also the old Boggs smelter, which came into its possession with the purchase of the Boggs properties. The combined capacity of the two smelters is about 150 tons per 24 hours, but for everything except the furnace capacity it is said to be complete for a plant of 500 tons, for which it was intended.

The president of the company states that it has a well-defined vein proved for 3,000 feet in length in the Iron Queen and adjacent mines, with a probable length of more than two miles, proved 5 feet in width at the minimum and widening out in some places to 40 feet. At the minimum measurements he estimates the contents of the vein at 30,000,000 cubic feet of ore. The ore is reported heavy, and at a calculation of about 10 cubic feet to the ton would give 3,000,000 tons of ore.

The Cliff and adjacent mines are considered richer and more valuable than the Iron Queen, and the Brookshire is thought to be richer than any of them. The company has now about ninety claims, covering some 1,700 acres, much of it proved to be ore bearing, and all of it thought to be probably ore-bearing property.

The management reports that it has uncovered ore bodies larger than anything it ever expected, and richer than it had hoped for, and that it has already blocked out more than a year's supply of ore for a hundred-ton smelter in advance.

The company has built a four-inch pipe line, nine miles long, to the Crystal Springs, bringing water to the hydrocarbon furnace with a 1,500-foot head. It also has, coming to it with the Boggs purchase, a five-mile pipe line to the Boggs furnace at Mayer.

The ores are self-fluxing sulphides and are easily and cheaply smelted. The company calculates that there is at least $10 a ton net profit on each ton mined and worked. The Treadwell Company has raised the capital that is needed by direct appeal to the investing public, and its policy has been that of paying its way as it went along.

Nearly $1,000,000 has gone into the Treadwell enterprise, and in October, 1903, there were 1,500 stockholders in the company.

Officers of the George A. Treadwell Mining Company are:

GEORGE A. TREADWELL, *President.*
MYRA B. MARTIN, *Secretary.*
ERWIN D. TREADWELL, *General Manager.*
WALTER S. LOGAN, *Treasurer and Counsel.*
Office, 27 William Street, New York.

HUMBOLDT COPPER COMPANY.

This company has a capitalization of $1,000,000, divided into 40,000 shares of $25 each. The property is located in Michigan, not far from the Arnold Mine; but no very important developments were recently under way. The office of the company is at 50 State Street, Boston.

ASHBED MINING COMPANY.

The Ashbed Mine has not been the scene of very active operations for some time past, and further development at the property awaits more propitious conditions. The company was organized in 1880 with a capital of $1,000,000, in 40,000 shares of $25 each. Office, 50 State Street, Boston.

MEADOW MINING COMPANY.

This company may be classed among the inactive properties at Lake Superior, so far as any extensive operations are concerned. Organization was effected in 1898, with a capital of $1,500,000 in 60,000 shares of $25 each. Office, 50 State Street, Boston.

AVERAGE VALUES OF COPPER IN ENGLAND, 1890-1902.

Year.	Chile bars or G. O. B. Per long ton.			Ore, 25%. Per unit.	
	£	s.	d.	s.	d.
1890....	54	5	5	10	7
1891....	51	9	8½	9	7
1892....	45	12	8¾	8	7
1893....	43	15	6¾	8	5
1894....	40	7	4	7	6½
1895....	42	19	7	8	4¼
1896....	46	18	1¾	9	1
1897....	49	2	6¾	9	5
1898....	51	16	7¼	10	1½
1899....	73	13	8½	13	2
1900....	73	12	6¼	13	1
1901....	66	19	8½	12	5
1902....	52	11	5½	8	10½

SAN LUIS MINING COMPANY.

The capital stock of this company is $1,000,000, in 100,000 shares of the par value of $10 each. The treasury stock on September 14, 1903, amounted to 8,785 shares. The company is the owner of all the capital stock of the Lucia Mining Company, which owns the extensive San Luis, La Trinidad and La Potosina groups of copper, silver, gold and lead mines near the city of Durango, in the State of Durango, Mexico.

The property is in the San Luis and San Lucas mining districts in the State of Durango, Mexico. It comprises the larger part of both districts, and consists of forty-three different mines, of which the principal are the San Luis, Trinidad and Potosina, and the San Pedro and San Pablo in the San Luis district, and the San Lucas, Llano and Condera in the San Lucas district. The company has a lixivation plant in which it was said in September, 1903, to be treating 100 tons of ore a day, besides shipping ore both from the San Lucas and San Luis mines.

Officers of the Company are:

WALTER S. LOGAN, *President.*
WILLIAM J. ROBINSON, *Vice-President.*
MYRA B. MARTIN, *Secretary.*
KENNETH S. MURCHISON, *Assistant Secretary.*
GEORGE A. TREADWELL, *Treasurer.*
ANDY EVANS, *General Manager.*

Office, 27 William Street, New York.

PHŒNIX CONSOLIDATED COPPER COMPANY.

The Phœnix Consolidated Copper Company was organized in April, 1899, with a capital of $2,500,000, divided into 100,000 shares of $25 each. There was paid in at organization $8 per share, and two assessments of $1 per share have since been called, on May 1, 1902, and October 27, 1902, respectively. The lands owned by the company embrace the old properties known as the Phœnix, St. Clair and Garden City mines, in Keweenaw County, Michigan, having an area of about 2,505 acres. In 1900 the company acquired the mineral rights and surface privileges on 80 acres of land adjoining their property on the south, which carries the southern extension of the Robbins or West vein. This 80 acres of land was part of the Atlas property.

The report of the company's operations in 1902 is as follows:

Assessment No. 1, called May 1, 1902		$100,000.00
Assessment No. 2, called October 27, 1902		100,000.00
Interest		1,454.78
Other sources		436.72
Total receipts		$201,891.50
Expended at mine	$229,409.62	
Other expenses	7,072.17	
Total expenditures		236,481.79
Expenditures over receipts		$34,590.29
Balance of assets December 31, 1901		47,583.99
Balance of assets December 31, 1902		$12,993.70

Operations are carried on through shafts working on the St. Clair vein, and the West vein. The St. Clair shaft is 8 x 12 feet, and, being on an incline, the distance from surface to the fourth level is 725 feet. While the new incline shaft was being constructed the bottom of the incline was extended 242 feet, and is now a few feet below the tenth level. There is an exploration tunnel at the fourth level, and this has been driven south 2,090 feet from the Greenstone. The new working shaft at the St. Clair extends from the surface to the fourth level, and below the fourth level the old incline is utilized. There are about 13,500 tons of stamp rock taken from the St. Clair territory ready for stamping when the new mill is completed. The copper bearing zone at this point increases in width as greater depth is reached.

The shaft at the West vein was sunk 165 feet in 1902, or to 65 feet below the seventh level. Drifts were extended at several levels, and the amount of available stoping ground increased. An amygdaloid belt was encountered about 450 feet from the shaft on the sixth level. This belt has been found at the seventh level and penetrated at a distance of about 120 feet from the shaft. In the operations conducted early in 1903 it was also found 60 feet below the seventh level, and is reported very rich whenever opened. No. 2 shaft was retimbered and put in good working order in 1901. There are six No. 2 Rand drills and an Ingersoll-Sargeant compressor 22 x 22½ x 24 inches at work in this part of the property. The boiler capacity at No. 2 shaft was increased in 1902 by two 100-horsepower double-flue boilers, and a new stack 70 feet high and 50 inches in diameter was set up.

The company has erected a new stamp mill building 50 x 190 feet, provided with suitable rock bins and trestle approach. The mill will be equipped with one stamp head, 18 x 24 inches, of the Ball type. The other machinery for the stamp mill will consist of 24 iron body jigs with classifiers, etc.; 4 Wilfley separating tables, 8 Overstrom separating tables, and other smaller experimental machinery. The stamp mill is located on Eagle River about one mile from the main location. During 1902 a railroad 3½ miles long was completed, connecting the shafts at St. Clair and West Vein with the new mill. This road will be equipped for hauling the rock from the mine to the mill. A storage dam has been built across the east branch of the Eagle River having an estimated capacity of about 3,000,000 gallons, and water will be delivered to the mill through about 2,800 feet of launders.

An assessment of $1 per share was called upon the capital stock of the company payable May 4, 1903. The official explanation for this assessment is that the interruption of work and transportation of material consequent upon severe winter weather greatly retarded installation of the stamp mill plant and the completion of the equipment of the shafts at the St. Clair and West Vein lodes; meanwhile the expenses of the mine continue, and the above call became imperative. With the opening of the spring season work was pushed, and the mill will soon begin stamping the large accumulation of selected rock on the stock pile, together with the output from the two openings now showing good copper ground.

In September, 1903, it was expected that the new stamp mill would start operations at an early date.

When the Phœnix stamp mill is in full running order it is expected to stamp 300 tons of rock daily. A recent test of wire bars from Phœnix copper showed a conductivity of 101 2-10 per cent. The copper from the Phœnix Mine is very pure, and the test above mentioned shows its adaptability for electrical purposes.

Assets and Liabilities.

Phœnix Consolidated Copper Company.

December 31, 1902.

Assets.

Cash in bank		$6,757.88
Supplies at mine		9,414.20
Balance of Assessment No. 1		14,699.00
Balance of Assessment No. 2		40,489.00
		$71,360.08
Liabilities.		
Accounts payable	$15,485.11	
Drafts outstanding	2,881.27	
Loans	40,000.00	
		58,366.38
Balance of assets December 31, 1902		$12,993.70

Officers of the Phœnix Consolidated Copper Company are as follows:

J. R. STANTON, *President.*
J. W. HARDLEY, *Secretary and Treasurer.*

Directors:

J. R. STANTON, WM. C. STUART,
J. W. HARDLEY, J. OPPENHEIM,
F. McM. STANTON.

Office, 15 William Street, New York.

Transfer Agent, American Loan and Trust Company, 53 State Street, Boston.

Registrar, Old Colony Trust Company, Ames Building, Boston.

The annual meeting of stockholders is held on the second Monday in March in each year.

BALTIC STAMP MILL.

PUMPING PLANT FOR MOHAWK AND WOLVERINE MILLS.

WILSON, STANTON AND SCOTT AT ST.
R SHAFT HOUSE, PHOENIX MINE.

HOIST AND COMPRESSOR PLANT, PHOENIX MINE.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS.

PITTSBURG & MONTANA COPPER COMPANY.

This company owns the Butte mines in which Mr. Franklin Farrel, of Ansonia, Conn., was formerly interested. The company did not produce any copper during the year 1902, and the property is only in process of development. Operations were carried on at shaft No. 2 in 1902. This shaft is down 800 feet, 400 of which were sunk last year. It is understood work has been begun on a new smelter, and that there is a probability the production of copper may begin the latter part of 1903. Meantime underground work and blocking out ore in its mines on the east side of Butte will proceed. The company consists of only a comparatively few stockholders. Ralph Baggaley is manager. The office of the company is 401 Tradesmen's Building, Pittsburg, Pa.

The boast of the Pittsburg & Montana Mining Company, the new corporation that is developing the East Butte copper district and is engaged in building a big smelter, is to make Butte to the copper industry what Pittsburg is to the steel and iron industry. By the new smelting method which is à secret with the Pittsburg Company it is proposed to use the combustibles in the ore as fuel and save the great cost of wood and coal; in other words, it is proposed to make the ore smelt itself. The company says it will be able to save all the heavy expenditures the other companies have for coal and for lime for fluxing, and the big loss of values in waste, besides which it will be able to treat 2 per cent copper ore. The company has one furnace of its smelter completed, which will have a capacity of 350 to 400 tons a day. Two more of the same size and four smaller ones will be built.

MAJESTIC COPPER MINING AND SMELTING COMPANY.

Organization was effected in 1900 under the laws of the State of Colorado, with a capital of $6,000,000 in 600,000 shares of $10 each.

The property is located in Utah, and comprises a large area and many claims. The company is completing a new smelter, and it is expected to be ready to start in September, 1903. There has been a great deal of money spent upon the development, equipment and operation of the mines, including the building of the smelter, but the time is approaching when returns will be coming in.

The Board of Directors by unanimous action, and a large number of stockholders, have requested a number of gentlemen to act as a Voting Trust Committee to consider ways and means to effect the financing of the company. In accordance with this movement, stockholders have been invited to deposit their stock certificates with the Farmers' Loan and Trust Company, New York, which will issue in exchange therefor certificates of deposit.

The smelter of the Majestic Company has been set up and was engaged in October, 1903, in a 30-day test run. It is not expected, however, that the smelter will be regularly running and producing matte before July 1, 1904. The smelter has a capacity of 350 tons of ore daily, 250 tons copper and 100 tons lead, and is all paid for.

The officers of the Company are:

W. B. MUCKLOW, ***President.***
GEORGE E. KEITH, ***Vice-President.***
THOMAS M. SMITH, ***Secretary and Treasurer.***
CHARLES M. MERRIAM, ***Assistant Secretary and Treasurer.***

Office, Salt Lake City, Utah.

TROY-MANHATTAN COPPER COMPANY.

This company is capitalized at $3,000,000 in 300,000 shares of $10 each. It was organized in 1902 under the laws of Maine, and is operating property in Arizona. Recent reports are to the effect that the development of the property is progressing favorably, especially in the Alice mine, where important ore bodies have been reported. A tunnel is being driven to cut the Alice vein at a depth of 700 to 800 feet. It is expected that this tunnel will extend a distance of some 1,700 feet in length. The construction of a railroad is under way which will pass within a few miles of the Troy-Manhattan mines and will materially aid in their development and operation. Office, Postal Telegraph Building, New York.

The annual meeting of the company was held at Portland, Me., April 28, 1903. There are five mines now open, and these are to be connected at depth by means of a main working tunnel, which when completed will open the entire property as a unit.

The company on above date was reported free and clear of all indebtedness, and showed a cash balance of $60,427.97, with 69.331 shares of stock in the treasury.

The smelter was in active operation in September, 1903, and producing from three to four tons of black copper per day.

Officers of the Company are:

JOHN W. SISSON, *President.*
AUGUSTUS K. SLOAN, *Vice-President.*
GEORGE E. W. STIVERS, *Treasurer.*
VINCENT P. TOMMINS, *Secretary.*

DRAGOON COPPER MINING AND SMELTING COMPANY.

This company was organized in 1902 under the laws of Arizona, with a capital of $2,000,000 in shares of $1 each. The property is located in Cochise County, Arizona, and the discovery of rich copper was recently reported at the mine.

It has been working for a little more than a year, and openings have reached the 350 foot level. The property is in the Dragoon Mountains near the Black Diamond mines. Address, Pearce, Cochise County, Arizona.

ARIZONA BLUE BELL COPPER COMPANY.

This company is capitalized at $500,000 in shares of $1 each, and incorporated under the laws of the State of Delaware. Property located in Arizona. Office, 71 Broadway, New York.

BELENE COPPER COMPANY.

This company was organized November 25, 1901, under the laws of Arizona, with a capital stock of 1,000,000 shares of the par value of $5 per share.

The property of the company is located at El Copete, Sonora, Mexico. The company report that they are sinking six shafts which on June 1, 1903, were down from 80 to 310 feet. The ores on and near the surface are azurite and malachite, but at a depth of 160 sulphide ore was found. Office, Journal Building, Chicago.

NEWHOUSE MINES AND SMELTERS COMPANY.

This company was incorporated in May, 1903, under the laws of the State of New York, with a capital of $6,000,000.

It is understood that the company is to acquire the mining interests of Mr. Samuel Newhouse in Beaver County, Utah, including the Cactus Copper mines.

It is reported that the company will issue $1,500,000 6 per cent first mortgage bonds, in addition to the entire $6,000,000 of stock.

According to reports a mammoth concentrator and a smelter are to be erected, as promising developments are expected at the Cactus mines.

ARIMEX CONSOLIDATED COPPER COMPANY.

This company is incorporated under the laws of the State of New Jersey. Authorized capital stock is $5,000,000 in 200,000 shares of $25 each. Property consists of claims in Mexico, Utah and Arizona. Office, 85 Ames Building, Boston.

ARIZONA GOLD AND COPPER COMPANY.

The property of this company is located in Arizona, where considerable work has been done. Incorporation is under the laws of Arizona, with an authorized capital of $1,000,000 in shares of $1 each. Office, 30 Broad Street, New York.

ARLINGTON COPPER COMPANY.

This company operated for a time at the old Schuyler mine, located in Arlington, N. J. Organization was effected in 1900, with a capital of $2,500,000 in shares of par value of $10. Office, Arlington, N. J.

UNITED GLOBE MINES.

These mines are located in the Globe district, Arizona, and are under the control and management of Messrs. Phelps, Dodge & Company.

There are no returns of output for 1902, nor for the first eight months of 1903. The product extracted at the United Globe mines is a silicious ore, and under present conditions it cannot be profitably handled. Exploration and development work is going on at the property in the hope of finding deposits better adapted for smelting. The production for the years given was as follows, in fine copper:

Year.	Pounds Fine.
1896	2,020.565
1897	1,241,975
1898	2,847,460
1899	4,451.180
1900	......
1901	830.100
1902	......

A new three compartment shaft was commenced in March, 1901, and it has reached a depth of 765 feet. At that point a heavy flow of water broke into the shaft in 1902, with a flow of about 1,000,000 gallons, which was decreased to about 250,000 gallons. Much development work has been done in other portions of the mine.

J. DOUGLAS, *President.*
G. NOTMAN, *Secretary and Treasurer.*

Office, 99 John Street, New York.

MEXICO'S MINERAL OUTPUT.

The Mexican monetary commission reports upon the mining output of the republic as follows:

The annual metallic mineral production of the country is $130,000,000, represented principally by silver and gold, but also including copper, lead, iron and other metals. The annual mineral metallic production of the country is exported in various forms, the following having been the exportations in 1902:

Gold in coin, bullion, cyanides, sulphides, ore, dust, or slimes, viz., $9,631,205; gold value with $13,652,314 added for exchange incidental to the conversion of the gold value into silver, $23,283,519; silver in coin, in bullion, in lead pipes, in copper bars, in cyanides, in sulphides, slag and ore, dust or slimes, $69,836,850; copper and copper ore, $18,837,397; lead and lead ore, $6,140,285; antimony and antimony ore, $597,639; sundry mineral products, $237,717; total, $118,935,409.

To the above exports of minerals it is necessary to add the increase of coined money in circulation, viz., $7,065,400; and the mercury, iron, lead, copper and other metals consumed in the country, $2,684,600; all of which items aggregate $10,000,000.

NEW ENGLAND GOLD AND COPPER COMPANY.

The property of this company is located in Bingham, Utah, with the United States Mining Company near the south boundary, the Boston Consolidated on the northeast, and the Utah Consolidated at no great distance.

The work done during 1902 was wholly development work. The drifts, raises and tunnels reported amounted to some 2,280 feet, which, added to that heretofore completed, amounted to some 6,000 feet of openings in the property. This work was carried on wholly along the line of the Nast and Benton claims, which are in the centre of the group. In doing this work ore was taken from the various openings said to amount to $9,048. The money expended in development during 1902 was reported at $28,932.

The ore extracted has been sold to the American Smelting and Refining Company at Salt Lake City, and the shipping ore was said to average a little over $30 per ton. The main tunnel has been completed, and arrangements were understood to be under consideration for the development and opening of the other properties on each side of this tunnel by cross-cutting it at a good depth. The company has started one shaft, and was down 162 feet from the lower tunnel, which it was proposed to continue.

The stock of the company is held largely by beef and cattle men of Boston and vicinity, with several in Chicago and Omaha. It has a capitalization of $1,000,000 in shares of $1 par, with 260,000 shares in the treasury. The plant is equipped with double boilers, engines, pumps, and other buildings. It is proposed to install a concentrating mill as soon as the character of the ore is more fully determined in the property now being opened.

The officers of the Company are:

D. W. WILLIAMS, *President.*
E. M. GIBSON, *Vice-President.*
GEO. F. BRADSTREET, *Treasurer.*

Office, 53 State Street, Boston.

COLUMBIA COPPER MINING COMPANY.

The mines of this company are at Bingham, Utah. During the year 1902 the company accomplished several hundred feet of development work, and added largely to the already large blocks of low grade concentrating ores. No ore was shipped by the company until June, 1902, all previous shipments being by leasers, but the total for the year was 256,741 tons crude ore, 2,263 tons ore milled, making 490.5 tons concentrates. Product: 318,885 pounds copper, 45.258 ounces gold and 548.72 ounces silver. The output of copper for January and February, 1903, totaled approximately 150,000 pounds for the two months.

Office, Salt Lake City, Utah.
F. B. COOK, *Manager.*

COLONIAL COPPER COMPANY.

The Colonial Copper Company is capitalized at $5,000,000 in shares of $1 each. The property is located in Peterboro County, Canada, and Cape D'Or, Nova Scotia.

The gross expenditures reported during 1902 amounted to $205,392.66. There are 624,296 shares of capital stock retained in the treasury, and the properties are said to be free from all encumbrances.

During the past year a new power plant was erected at No. 2 or Hanway Lode, well equipped with machinery, Rand Duplex Air Compressor, three large hoisting engines, boilers, etc. Also additional machinery at Nos. 1 and 3.

The work done last year was confined to three of the leads or lodes on the property, viz.: No. 1, No. 2 (or Hanway Lode), and No. 3 (or Bennett Brook), and about 2,000 feet was officially reported to have been driven in the various tunnels, drifts and cross-cuts. No. 1 shaft was 371 feet in depth, with over 1,000 feet of tunnel and drifts from same. Sinking was on the vein, and rock said to be very fine. At No. 2 slope was reported going south from surface 326 feet, and slope going north from surface on the vein 300 feet. More than 800 feet of tunnels and drifts in addition. No. 3 is a vertical shaft, in depth 180 feet, with tunnels and drifts of over 300 feet.

The officers of the Company are:

J. A. HANWAY, *President.*
A. MUNGER, *Treasurer.*
Office, 32 Broadway, New York.

VIRGINA BELLE GOLD AND COPPER MINING COMPANY.

The property of this company is located in Rincon Mountains, Pima County, Arizona, and consists of seven mining claims, 600x1,500 feet each, or 140 acres in all.

The company was organized and incorporated under the laws of Arizona, January 25, 1902, with a capital stock of $1,500,000, divided into 1,500,000 shares of $1 each, of which 700,000 in stock is contributed to the treasury of the company. Several shafts are reported on the property, from a few feet to 110 feet in depth. Office, Minneapolis, Minn.

COPPER GLANCE MINING COMPANY.

Organization of this company was effected in 1901, with a capital of $2,500,000, in shares of $1 each. The property is in the Warren district, Arizona, and recent developments are promising. New machinery and pump for the mine have been added to the equipment recently.

AMERICAN SMELTING AND REFINING COMPANY.

This company was incorporated under the laws of the State of New Jersey on April 4, 1899, with a capital stock of $50,000,000 7 per cent cumulative preferred and $50,000,000 common. Par value of shares, $100 each. All issued. The company owns extensive smelting and refining plants, where lead and copper ores are treated, in New Jersey, Colorado, Utah, Kansas, Montana, Nebraska and Mexico.

At the close of the fiscal year ended April 30, 1903, the company had in operation, according to official statement, smelting plants with a capacity of 3,720,000 tons per annum, refining plants with a capacity of 340,000 tons of lead bullion and 36,000 tons of copper bullion per annum. There were held in reserve ready to operate at short notice, in an emergency, smelting plants with a capacity of 125,000 tons of lead bullion per annum.

The company had on its books 850 common stock holders and 3,250 preferred stock holders.

The annual report of the American Smelting and Refining Company for the fiscal year ended April 30, 1903, shows:

Year Ended April 30.

	1903.	1902.	1901.
Net	$9,403,711	$7,038,682	$5,988,049
Betterments	770,854	791,306	888,410
Balance	$8,632,857	$6,247,376	$5,099,639
Charges	1,056,071	1,385,757	1,271,198
Balance	$7,576,786	$4,861,619	$3,828,441
Extra improvements	2,155,683	1,300,000	——
Balance	$5,421,103	$3,561,619	$3,828,441
Dividends	3,500,000	3,500,000	1,918,000
Surplus	$1,921,103	$61,619	$1,910,441

President Nash of the American Smelting and Refining Company in his report says: "From the net earnings of the year $655,683 was appropriated for extraordinary expense, leaving a balance of $6,921,103, which, under ordinary circumstances, would be applicable for dividends. From this balance, however, the sum of $1,500,000 was credited to metal stock account. The company does not speculate in metal, but this account was built up so as to absorb all fluctuations in market value in metals in process of treatment and leave the regular profits of the company, arising from the treatment charges on ore and bullion, unimpaired at all times.

"The physical condition of the property has been fully maintained. With the exception of a small tonnage of copper and pig lead in bond for export, the company had no refined metals on hand at the end of the fiscal year, the inventory showing the entire metal stock to be in ore, in bullion or in process of treatment.

"The company has issued no bonds, but in acquiring some of its property assumed certain outstanding bonds. The amount of bonded indebtedness assumed was $2,332,000. Bonds purchased and cancelled were $1,367,000, and amount of bonds outstanding is $965,000.

"At the beginning of the last fiscal year the company had outstanding notes payable aggregating $3,799,000. These notes were paid during the year, and the company has no floating indebtedness. Net current liabilities as shown in balance sheet consist entirely of accounts payable not due for ores and supplies in transit, April payroll and accrued taxes and bond interest."

Gross receipts from sale of metals and miscellaneous revenue for the last fiscal year aggregated $83,089,278.

Office, 71 Broadway, New York.

RIO TINTO COMPANY, LIMITED.

During the year 1902 this company produced 1,865,289 tons of pyrites, the copper contents of which averaged 2.517 per cent. This production compares with 1,928,776 tons of pyrites with an average copper contents of 2.627 per cent during the year 1901.

The fine copper produced in 1902 was as follows:

	Tons.
By treatment at mines	21,659
Copper in pyrites shipped	12,819
Total	34,478

During the year 1901 the production of fine copper was as follows:

	Tons.
By treatment at mines	21,100
Copper in pyrites shipped	14,248
Total	35,348

The contents in fine copper of the reserve heaps, as estimated in March, 1903, was 142,951 tons. These reserves are kept at the low book value of £4 6s. 10d. per ton.

The company completed a new Bessemer plant in November, 1901, and this has been in full working order since January, 1902. The adoption of this method of treating copper enables the company to treat the ore to such an extent in Spain that it can ship the copper resulting in Bessemer bars of 98 to 99 per cent copper, instead of in matte of 28 to 34 per cent. The new plant has quite fulfilled expectations by reducing cost of manufacture and saving freight.

Profit on sale of produce for 1902 was £1,399,831 10s. 10d., which compares with profits in 1901 of £1,767,742 7s. 10d. and £1,905,245 19s. 11d. in 1900.

The following disbursements have been made in dividends from proceeds of operations during the years named:

	Amount of dividends.		
Year.	£	s.	d.
1902	888,756	10	2
1901	1,254,804	13	9
1900	1,458,776	0	10
1899	1,378,541	13	4
Total dividends for four years	4,980,878	18	1

There was set aside to account of the reserve fund in 1902 the sum of £50,000, which brings it up to £450,000. The amount of 4 per cent first mortgage bonds now outstanding is £3,173,200.

The share capital of the Rio Tinto Company, Limited, consists of 325,000 5 per cent preference shares of £5 each, fully paid up, £1,625,000, and 325,000 ordinary shares of £5 each, fully paid up, £1,625,000, making a total capital of £3,250,000.

The company declared in October, 1903, a dividend of 32s. 6d. per share on the ordinary shares, which compares with 27s. 6d. per share in May, 1903.

Officers of the Rio Tinto Company, Limited, are:

J. J. J. KESWICK, *Chairman.*

MAJOR-GEN. SIR ARTHUR E. A. ELLIS, G. C. V. O., C. S. I., CHARLES W. FIELDING, JOHN M. MACDONALD, JOHN MACFARLAN, LIONEL C. G. SARTORIS.

Joint Secretaries:

J. GORDON MACLEOD, SAM. J. BOWES.

Offices, 30 St. Swithin's Lane, London, England.

THARSIS SULPHUR AND COPPER COMPANY, LIMITED.

This company owns an extensive territory in the mining district of the Province of Huelva, Spain. The mineral obtained is cupreous pyrites, and is found in large lenticular-shaped deposits. The mineral contains about 50 per cent sulphur, 45 per cent iron, 3 per cent copper, with small quantities of gold, silver, lead, zinc, bismuth, nickel antimony, arsenic and silicon. The mines chiefly worked by the company are the Tharsis, Calanas and Lagunazo.

The total quantity of mineral raised at all the mines during the year 1902 (exclusive of cupreous sterile) was 342,692 tons, against 400,162 tons in 1901, a decrease of 57,470 tons, accounted for mainly by the stoppage for the present of extraction at Tharsis. The reduced production is due to the exhaustion of cupreous mineral at the Tharsis and Lagunazo mines. The production of fine copper in 1902 amounted to 6,708 tons, against 7,427 tons in 1901 and 7,967 tons in 1900. The payable cupreous ore at the Lagunazo Mine became exhausted in August, 1902. As far as cupreous pyrites is concerned, the company is now entirely dependent on the Calanas Mine. At the present rate of extraction from that mine there is in sight a quantity sufficient to last about ten years.

The net profit for the year 1902 was £169,602, against £263,679 in 1901. Last year's profits were the smallest in the previous eight years.

The Tharsis Company has been in existence thirty-six years, and during that period it has earned and divided £7,633,432, or an average dividend of 19 per cent per annum on its capital stock.

The sum of £187,500 was paid as a dividend to stockholders on May 8, 1903, out of the operations for 1902. This dividend was 6 shillings per share, equal to 15 per cent on the capital of the company. The balance carried forward from 1902 operations was £25,888 15s. 5d.

With a sufficient supply of water at the mines a production of about 6,000 tons of copper for the year 1903 was expected. The company has been in search of new mines recently, and obtained one in the south of Norway; but results from development work there have been disappointing. On December 31, 1902, the company had on hand in bills, securities and cash the sum of £834,361 5s. 6d.

The company has a capital of £1,250,000, divided into 625,000 shares of £2 each, fully paid.

Officers of the Tharsis Sulphur and Copper Company, Limited, are:

SIR CHARLES TENNANT, Bart., *Chairman.*
DAVID BARLAS, *Secretary.*
Office, 136 West George Street, Glasgow, Scotland.

MOUNT LYELL MINING AND RAILWAY COMPANY, TASMANIA.

Directors report for the half year ending March 31, 1903, an aggregate output of 150,964 tons of ore from open-cut and underground openings, with a small quantity of precipitate from the mine water, the total tonnage for the six months being 8,670 tons less than for the previous half year.

The blister copper produced during the half year above mentioned was 2,908 tons of an assay value as follows: Copper, 98.79 per cent; silver, 95.26 oz., and gold, 3.387 oz., and contained 2,873 tons metallic copper, 276,988 ozs. silver, and 9,850 ozs. gold.

The net profit for the half year ending March 31, 1903, amounted to £48,666 after writing off £1,375 for dividend and income taxes, £18,319 for depreciation on plant, and £7,993 for prospecting work. Net profit shows an improvement of £3,317 over previous half year, notwithstanding the smaller quantity of blister copper produced during the period named.

During the half year £27,500 was distributed in two dividends of 1s. per share, which were paid October 1, 1902, and January 3, 1903, respectively. A further dividend of 1s. per share was paid April 1, 1903, out of the profits of the half year under review.

In 1902 the company arranged a three years' extension of the existing American contract for the refining of their blister copper. The Mount Lyell is the leading copper producer in Tasmania.

The company has two smelting plants, the older, or No. 1 plant, containing six blast furnaces, and the newer plant, No. 2, five blast furnaces. Smelting operations were begun June 25, 1896.

The blister copper is poured into plates, or cakes, measuring 16x24 inches, and 2¼ inches thick, the old method of bars or pigs having been given up. A parcel of 50 tons contains 500 plates. The copper turned out in this form is shipped to Baltimore, via London, where it is refined into electrolytic wire bars, ingots and other shapes. By this process the precious metals are separated from the copper and the refined copper is mostly sold for export to Europe.

During the four weeks ending April 29, 1903, the company reported the quantity of ore smelted was 22,021 tons, from which there was obtained 450 tons of black copper, containing 444 tons of fine copper, 46,843 ozs. silver and 1,661 ozs. gold. The average contents were 2.02 per cent copper, 2.83 ozs. silver and 0.075 ozs. gold to the ton.

BOLEO COPPER COMPANY.

This company operates extensive copper mines and smelters in Lower California near Santa Rosalia, almost opposite the port of Guaymas, Sonora. The property is largely owned by the Rothschilds of Paris, France.

The mine is opened on beds occurring in a formation of tertiary sandstones, conglomerates and tufas. There are three ore beds of large area, and several varieties of ores are found in the cupriferous deposits.

A great deal of money has been expended in the enterprise. The smelters are reported to produce about 300 tons per day of about 40 per cent matte.

The company has been producing between 10,000 and 11,000 tons of copper annually, sometimes a little more, from which considerable net profit is derived.

The production of copper in 1902 was 10,953 metric tons. The quantity of ore mined in 1902 was 249,895 tons, against 275,685 tons in 1901, but the yield of copper last year was 4.383 per cent, compared with 3.95 per cent during the previous year. The profits of the company in 1902 were 1,750,961.08 francs, or 544,705.48 francs more than in 1901.

MASON AND BARRY, LIMITED.

This company has a registered capital of £210,000 in 210,000 shares of £1 each. Of this there have been issued 185,145 shares of £1 each, fully paid up; 27 shares are reserved for holders of share warrants issued by the old company, and 24,828 shares are unissued.

The mine is located in Portugal, and the total quantity of ore broken and raised during the year 1902 at the San Domingos Mine was 177,563 tons, as against 129,314 tons in 1901, and the shipments during the same period (inclusive of ore from the cementation works) amounted to 405,111 tons, as against 449,760 tons in the previous year. The quantity of ore sold and invoiced for its sulphur value during 1902 amounted to 413,309 tons, compared with 453,027 tons in 1901.

The company reports that after writing off in the mine books for depreciation of works, plants, etc., the sum of £20,681, which is approximately the value of new works and plant added to capital account during the year, and allowing for the variation in the estimated value of stocks on hand in England, on the Continent and in Portugal on December 31, 1902, and after deducting management expenses and income tax, the net profits on working account amounted to the sum of £90,495 4s. 3d., to which was added the sum of £9,315 15s. 1d. received as dividend on La Sabina shares, and the sum of £1,301 15s. 7d. from sundries, making together a total net profit for the year 1902 of £101,112 14s. 11d.

Stocks of ore and copper precipitate broken, raised and on hand December 31, 1902, were valued at £75,298, against £70,498 in 1901 and £99,110 in 1900. On December 31, 1902, there was a balance for appropriation of £107,676 13s. 10d. From this balance a dividend of 55 per cent, or 11 shillings per share, was paid; and appropriation of £1,000 to the Staff Pension Fund made, and £4,832 1s. 10d. carried forward to the next account.

Mr. James Mason, who in conjunction with Sir Francis Tress Barry started the works at the mine in 1858, and who had been chairman from the formation of the company, in 1878, until his retirement, in 1890, died on April 2, 1902.

Officers of Mason and Barry, Limited, are:

SIR FRANCIS TRESS BARRY, BART, M. P., *Chairman.*
EDWARD O. BARRY, *Secretary and Manager.*

Directors:

SIR FRANCIS TRESS BARRY,
JAMES FRANCIS MASON,
HENRY EDWARD BEDDINGTON,
CAPTAIN THOMAS BRIDGES HEATHORN,
R. A. FRANCIS RICARDO,
DOUGLAS HERRON BARRY.

Office, 87 Cannon Street, London.

CAPE COPPER COMPANY, LIMITED.

The mining properties of this company are located in Africa and Newfoundland. The balance sheet and profit and loss account for the year ending April 30, 1902, in the colony, and to August 31, 1902, in London and Newfoundland, shows a loss on the year's working of £6,493 17s. 9d. The amount of profit brought from the previous year was £164,688 9s. After deducting the above loss there remained a credit balance of £158,194 11s. 3d. From this amount there was paid for income tax £14,588 18s. 8d. and in dividends £138,000.

The above payments left a balance of £5,605 12s. 7d., out of which a dividend of 2s. 3d. per share on cumulative preference shares was paid January 1, 1903. The lower prices of copper prevailing during the period referred to, at a time when the company was carrying a very large quantity of furnace material, and the decreased output from the mines, are among the principal causes operating to reduce the income of the company. Operations at Ookiep and Nababeep mines were suspended for a month owing to the invasion of Namaqualand by the Boers during the South African War. The Boers did a great deal of damage to the railway and to the machinery and buildings of the company. The smelting works Corliss engine and its two boilers were completely destroyed by dynamite.

The company has a capital of 300,000 shares of £2 each, fully paid, and 75,000 preference shares of £2 each, of which 45,000 have been issued.

Directors of the Cape Copper Company, Limited, are:

EDMUND A. PONTIFEX, *Chairman.*
JOHN GALSWORTHY, JOHN GALSWORTHY, Jr.
T. RUSSEL KENT, JOHN E. CHAMPNEY,
JOHN TAYLOR.

Office, 9 Queen Street Place, London.

Production.

The production from the Ookiep Mine during the twelve months was 15,075 net dry tons, and 3,700 net dry tons of slimes, assaying about 10 per cent.

The return from the Nababeep Mine for the year was 11,273 gross tons of 6.52 per cent wet assay.

The product from the Spectakel Mine during the twelve months was 102 net dry tons.

At the East Mine, Tilt Cove, Newfoundland, the output for the year ending August 31, 1902, was 49,147 tons 3.20 per cent wet assay; at the South Lode, 9,417 tons of ore, assaying 3.85 per cent, wet assay, and at the North Lode, 7,119 tons of ore of 3.32 per cent wet assay, or a total of 65,683 tons. Reserves at the Newfoundland mines were estimated at 158,738 tons, against 188,020 tons the year previous.

NAMAQUA COPPER COMPANY, LIMITED.

This company carries on the mining of copper in South Africa. Its authorized share capital is 100,000 shares of £2 each, of which there are issued 94,331.

The mines are located at Concordia, Namaqualand. Work on the property was actually suspended for three months out of the twelve months of 1902 owing to the disturbed condition of the country.

The profit on the nine months' working, after providing for the losses and depredation caused by the Boers, was £10,873, out of which the directors paid a dividend this year of 5 per cent. The company has a reserve fund of £50,000, which remained intact at last report. It is estimated that there is in actual sight enough ore at present developed (May, 1903) to keep the company at work for the next four years.

Office of the company is in London, England.

TYEE COPPER COMPANY, LIMITED.

This company is the owner of the Tyee group of mines, situated on the Mount Sicker slope, in the Victoria district, British Columbia. A smelter has been erected at Ladysmith for the treatment of the ores from the Tyee mine, and this was "blown in" during December, 1902. The main shaft has been sunk over 400 feet in depth. Office of the company is in London, England.

COPETE MINING COMPANY.

The property of this company is located at El Copete, Sonora, Mexico, where the ores found are said to be rich in gold as well as copper.

The company is capitalized at $5,000,000 in shares of $5 each par value, with more than 45 per cent. of the stock in the treasury.

Office, 27 William Street, New York.

BRITISH COLUMBIA PRODUCTION OF COPPER.

The production of copper in the Province of British Columbia, by districts, during 1901 and 1902, was as follows:

Districts.	1902. Pounds.	1901. Pounds.
Boundary	14,955,582	14,511,787
Rossland	11,667,807	8,333,446
Coast	2,496,681	3,115,872
Nelson	491,144	1,599,449
Other districts	24,843	43,192
Total	29,636,057	27,603,746

The total production in 1900 was only 9,997,080 pounds. The great increase is due to the working of the exceedingly large and extremely low grade copper ores which are being treated at the various smelters in the Boundary district. There have been material reductions made in the actual cost of smelting, which are authoritatively stated as having been reduced as low as $1.35 to $1.50 per ton of ore. The output of ore in the Boundary district in 1902 was over half a million tons. The value of the copper production in British Columbia in 1902 was $3,446,673, against $4,446,963 valuation of product in 1901. The depreciation in value of 1902 output was owing to the drop in market price of copper.

During the year 1894 the production of copper in British Columbia amounted to only 324,680 pounds. The aggregate copper output of the Province during the past nine years is 92,652,480 pounds, valued at $12,333,200.

MARKET PRICES OF COPPER MINING SHARES.

The following table gives the highest and lowest market prices of the copper mining shares on the Boston Stock Exchange during the periods stated, viz.:

1901.

Name of company.	1901. Jan. 1 to Mar. 30. Highest.	Lowest.	1901. April 1 to June 30. Highest.	Lowest.	1901. July 1 to Sept. 30. Highest.	Lowest.
Adventure	16⅛	9¼	22¼	13¾	33	21
Amalgamated	104	84½	129⅛	90	124¼	87½
Arcadian	24¾	15	23½	15	17	8½
Atlantic	35¼	25½	38½	29	43	32¾
Bingham	26½	15	29½	20	43¾	21
Baltic	47⅞	32½	54	35	58	40¾
Boston & Montana.	370	300	498	350	—	—
Butte & Boston...	106½	76	124½	92	—	—
Calumet & Hecla..	860	*775	840	785	790	651
Centennial	29½	20¼	34¼	23½	32½	19½
Copper Range.....	58½	34	78½	45	83	53
Franklin	25⅛	†15½	21½	16	22¾	16
Isle Royale.......	45	33	56½	41	45¾	25¼
Mass Mining......	17¼	11	20⅝	14¾	37	16¾
Mohawk	35	22	53½	29⅛	56¼	39½
Old Dominion.....	38¾	28¼	36¾	28	35	27
Osceola	95	78	93	80	120	87
Parrot	54½	45	58½	47	54	36½
Quincy	180	152½	187	165	180¾	159
Santa Fe.........	9	6	10¼	6½	8	4¾
Tamarack	350	320	350	315	363	280
Trimountain	44	19½	55	34	60	45
Utah Cons........	37½	31	37¼	25	32½	23
U. S. Mining......	20⅛	9¼	24	15½	22	16¼
Victoria	5½	3½	5	3⅝	12	4½
Winona	10	4	5	2¼	4¾	2
Wolverine	56	47½	68	50	73½	56

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* Ex dividend. † Ex rights.

1901.

Name of company.	1901. Oct. 1 to Dec. 31.		1901. Whole year.		1901. Aggregate sales for year. Number of shares.
	Highest.	Lowest.	Highest.	Lowest.	
Adventure	25⅞	15¾	33	13¾	236,372
Amalgamated	92	60½	129⅛	60½	1,939,810
Arcadian	9½	3	24¾	3	107,957
Atlantic	42	23	43	23	62,805
Bingham	33	23	43¾	15	223,362
Baltic	48	30¾	58	30¾	180,791
Boston & Montana.....	—	—	498	300	53,321
Butte & Boston.......	—	—	124½	76	225.842
Calumet & Hecla......	680	535	860	535	5,796
Centennial	21¾	10¼	34¼	10¼	262,860
Copper Range.........	70	45	78½	34	297.796
Franklin	18	11½	25⅛	11½	105,015
Isle Royale...........	28	18	56½	18	261.242
Mass Mining..........	29	15	37	11	361,085
Mohawk	46½	25	56¼	22	324,884
Old Dominion.........	29¾	20½	38¾	20½	350,283
Osceola	104	72	120	72	198.812
Parrot	41½	27	58½	27	171,903
Quincy	165	125	187	125	14,017
Santa Fe.............	5¾	2¼	10¼	2¼	121,173
Tamarack	310	230	363	230	13,283
Trimountain	48½	28	60	19½	238,949
Utah Cons............	26	18½	37½	18½	244,319
U. S. Mining..........	17⅝	11¾	24	9¼	532,905
Victoria	9	4	12	3½	205,188
Winona	3	1½	10	1½	124,598
Wolverine	62	44	73½	44	109,471

Sales of Amalgamated and Anaconda copper shares on the New York Stock Exchange during the year 1901 were as follows:

Amalgamated	11,989,980 shares,	Highest 130,	Lowest 60½
Anaconda	1,146,900 shares,	Highest 54¼,	Lowest 28¼

MARKET PRICES OF COPPER MINING SHARES ON THE BOSTON STOCK EXCHANGE.

1902.

	1902.		1902.		1902.	
Name of company.	Jan. 1 to Mar. 30. Highest.	Lowest.	April 1 to June 30. Highest.	Lowest.	July 1 to Sept. 30. Highest.	Lowest.
Adventure	24⅝	17¾	25	21	24¼	19¼
Amalgamated	79	61⅛	71⅝	52⅝	71⅜	61⅞
Arcadian	13¼	3½	9½	4	5⅝	4½
Atlantic	33	22	37	28	31	25
Bingham	27⅝	20	39¾	25	35⅛	29
Calumet & Hecla...	650	560	600	530	580	526
Centennial	28	11	22	17	20¾	15½
Copper Range Cons	49½	43½	64	48⅞	60¾	52
Franklin	16	11¾	12½	10¾	12	10
Isle Royale.......	25	15	17¼	11¼	15¼	11⅝
Mass Mining......	21	15⅝	21½	17	18⅞	15¼
Mohawk	39	27	44	34	49¼	40¾
Montreal & Boston	4¾	3	4	2	3⅞	1⅞
Old Dominion.....	25¼	18¼	23¾	17½	20	16½
Osceola	89¾	58½	66¾	60	62½	55
Parrot	34½	28	32½	24¾	30	25½
Quincy	147	130	135	125	137	125
Santa Fe.........	4	2¾	3½	1⅞	2½	1½
Tamarack	281	175	185	169½	182	165
Trimountain	125	31½	109	95	95	94
Trinity	18½	11	14¾	11¾	12¾	10½
Utah Cons........	27¼	21¼	23½	20	23¼	19
U. S. Mining......	19⅜	13¼	22½	18⅜	22⅞	19
Victoria	6¾	4½	6⅜	4	6⅜	5⅛
Winona	2	1	5½	1½	6	4
Wolverine	56	42	56	53	61½	54½

1902.

	1902.		1902.		1902. Aggregate sales for year.
Name of company.	Oct. 1 to Dec. 31. Highest.	Lowest.	Whole year. Highest.	Lowest.	Number of shares.
Adventure	22	12½	25	12½	64,730
Amalgamated	67¼	53	79	53	819,731
Arcadian	5	3½	13¼	3½	134,307
Atlantic	26	6½	37	6½	43,934
Bingham	29⅞	24	39¾	20	111,931
Calumet & Hecla	545	420	650	420	4,364
Centennial	20	15	28	11	284,471
Copper Range Cons.	65¼	50	65¼	43½	664,279
Franklin	10	7½	16	7½	19,924
Isle Royale	15¼	9¾	25	9¾	48,878
Mass Mining	16¼	12½	21½	12½	185,840
Mohawk	47¾	36	49¼	27	112,041
Montreal & Boston	3⅝	2¼	4¾	1⅞	367,114
Old Dominion	18	14½	25¼	14½	69,365
Osceola	62½	47½	89¾	47½	98,569
Parrot	27	20½	34½	20½	27,082
Quincy	130	100	147	100	4,507
Santa Fe	2	1½	4	1½	74,002
Tamarack	175	140	281	140	15,734
Trimountain	94	90	125	31½	71,343
Trinity	11¾	7⅞	18½	7⅞	173,272
Utah Cons.	26	19¾	27¼	19	120,193
U. S. Mining	23	19	23	13¼	334,083
Victoria	7	4	7	4	62,710
Winona	5⅞	3	6	1	85,086
Wolverine	65	57	65	42	25,450

Sales of Amalgamated and Anaconda shares on the New York Stock Exchange during the year 1902 were as follows:

Amalgamated	6,915,849 shares,	Highest 79,	Lowest 53
Anaconda	254,929 shares,	Highest 146,	Lowest 80

Prices for other copper shares in 1902:

Greene Cons.	Highest 32¼,	Lowest 19
United Copper	Highest 36½,	Lowest 28
Tennessee	Highest 18¼,	Lowest 10½
White Knob	Highest 24,	Lowest 5½
British Columbia	Highest 10½,	Lowest 5

MARKET PRICES OF COPPER MINING SHARES.

The following are the highest and lowest market prices of the copper mining shares at the Boston Stock Exchange during the following months, in 1903:

Name of Company.	1903. Jan. 1 to Apl. 1. High.	Low.	1903. Apl. 1 to July 1. High.	Low.	1903. July 1 to Sep. 1 High.	Low.
Adventure	18	10	10⅝	5	6¾	3¾
Amalgamated	75⅝	62½	67⅝	51¼	56¼	36
Arcadian	6⅛	4⅛	4½	2	2½	1½
Atlantic	14⅛	8½	13	9	10	8
Bingham	39½	29½	32⅜	25¼	28	20¼
Calumet & Hecla	551	498	530	430	484½	400
Centennial	31⅞	19¼	28¼	17¼	22½	12½
Copper Range Cons.	75	59	68	50½	69¼	37
Franklin	14	9⅞	12	8	9	6¾
Isle Royale	17½	10½	13	6¼	9	5¼
Mass Mining	18	9¼	11¼	5⅝	6½	3
Michigan	11½	9	9¼	6	9	5⅞
Mohawk	58¾	43½	54½	42	47	31
Montreal & Boston	2⅝	1½	2⅜	15-16	1¼	.70
Old Dominion	23½	17½	18⅞	12⅛	13¾	8⅞
Osceola	79	59	71¾	50	64	43½
Parrot	34	26	30¼	19¾	23	16
Quincy	126½	107½	120	95	100	85
Santa Fe	3	1¾	2¾	1⅛	1½	1
Tamarack	190	149	165	110	119	75
Trimountain	106½	89	94	82	84¾	76
Trinity	14	10	11	4½	8	4
Utah Consolidated	33	23¼	33⅝	26⅞	29⅝	22
United States Mining	27½	21¾	26	19⅝	22⅜	16¼
Victoria	9	6⅛	6¾	4	4⅜	3
Winona	14¾	5⅝	12⅞	8	10¼	5½
Wolverine	77	66	75	64½	74	54

THE NEW BUILDING OF THE NEW YORK STOCK EXCHANGE, OPENED APRIL 22, 1903.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS.

BOSTON STOCK EXCHANGE.

OFFICERS.

PRESIDENT,
CHARLES C. JACKSON.

VICE-PRESIDENT,
HENRY L. HIGGINSON.

TREASURER,
SIDNEY CHASE.

CHAIRMAN,
GEORGE F. LORD.

SECRETARY,
GEORGE F. LORD.

TERM EXPIRES 1904.

G. FREDERIC GRIDLEY, ARTHUR W. HALE,
FRANK W. REMICK, HENRY HORNBLOWER,
CHARLES HEAD, HARRY K. WHITE.

GOVERNING COMMITTEE,
TERM EXPIRES 1905.

JOHN PARKINSON, WILLIAM A. PAINE,
CHARLES W. TEWKSBURY, HAZEN CLEMENT,
MANNING EMERY, HENRY W. DODD.

MEMBERS.

* MEMBER OF NEW YORK STOCK EXCHANGE.

NAME.	FIRM.	OFFICE.
Anthony, Arthur C.	Townsend, Anthony & Tyson.	40 State Street.
*Arnold, Allen.	Lawson, Arnold & Co.	33 State Street.
Baker, Ezra H.		27 Ames Building.
*Baldwin, George S.	Geo. S. Baldwin & Co.	19 Exchange Place.
*Basset, William.		53 State Street.
Belches, John W.	John W. Belches & Co.	53 State Street.
Bemis, Harry H.	Adams & Co.	7 Congress Street.
Bennett, Stephen H.		53 State Street.
Bigelow, Prescott.		4 Post Office Square.
Blagden, George, Jr.	Clark, Dodge & Co.	51 Wall Street, New York.
Blake, Henry S.	Curtis & Sanger.	53 State Street.
Bolles, Richard F.	M. Bolles & Co.	19 Kilby Street.
Bowen, James W.	J. W. Bowen & Co.	53 State Street.
Bridge, J. Ransom.	J. Ransom Bridge & Co.	53 State Street.
Bright, William E.	Bright, Sears & Co.	53 State Street.
*Brooks, George C.	Geo. C. Brooks & Co.	15 Exchange Street.

NAME.	FIRM.	OFFICE.
*Brown, Albert L.	Brown, Riley & Co.	20 Congress Street.
Brown, J. Francis.	J. Francis Brown & Co.	15 Congress Street.
Brown, Winthrop.	With R. L. Day & Co.	40 Water Street.
Burnham, Charles H., Jr.	Burnham & Haynes.	131 State Street.
Butterfield, Charles B.		53 State Street.
Cabot, Charles Mills.	Moors & Cabot.	111 Devonshire Street
Chase, Sidney.	Chase & Barstow.	Ames Building.
Clement, Hazen.	Clement, Parker & Co.	53 Devonshire Street.
Colwell, Henry F.		146 Devonshire Street
Crocker, Joseph B.	Edgerly & Crocker.	53 State Street.
*Currie, Cameron.	Cameron Currie & Co.	Detroit, Mich.
Dabney, Frederick Lewis.	F. L. Dabney & Co.	53 State Street.
*Day, Frank A.	R. L. Day & Co.	40 Water Street.
Dennett, Howard Scott.	Dennett Bros. & Co.	18 Post Office Square.
Devens, Arthur Lithgow.	Devens, Lyman & Co.	4 Post Office Square.
Dewey, F. O.		53 State Street.
Dillaway, C. F. W.	Stewart Barr & Co.	52 Broadway, New York.
Divver, Neil A.	Thomas H. Perkins & Co.	68 Devonshire Street.
*Dodd, Henry W.	Richardson, Hill & Co.	40 Water Street.
Dow, Stephen R.	With Chase & Barstow.	Ames Building.
Dupee, Theodore D.		53 State Street.
Emery, Manning.	Emery & Tucker.	8 Congress Street.
*Estabrook, Arthur F.	Estabrook & Co.	35 Congress Street.
Fay, J. Story, 3d.	With Parkinson & Burr.	53 State Street.
Fernald, George A.	Geo. A. Fernald & Co.	40 Water Street.
Fisk, Alexander G.	Harvey Fisk & Sons.	Delta Building, 10 Post Office Square
Foster, Herbert I.	Paine, Webber & Co.	27 State Street.
Fuller, Wirt X.	Fuller, Tilton & Co.	60 Devonshire Street.
Gay, Harry H.	Gay & Sturgis.	4 Liberty Square.
*Giddings, Edward L.	Tower, Giddings & Co.	105 Devonshire Street
Gilbert, Arthur H.	Foote & French.	27 State Street.
Gilbert, Edward W.	Barnard & Gilbert.	40 State Street.
Goodnow, William N.	With R. L. Day & Co.	40 Water Street.
Goodwin, Homer.	Goodwin & Thorndike.	53 State Street.
Goodwin, William H.	Bond & Goodwin.	27 Congress Square.

NAME.	FIRM.	OFFICE.
Greenleaf, Eugene D.		53 State Street.
Greenleaf, Lyman B.		53 State Street.
Gridley, G. Frederic.	Downer & Co.	28 State Street.
Hale, Arthur W.	Hale & Co.	53 State Street.
Hall, Joseph H.	Joseph E. Hall & Co.	53 State Street.
Hamlin, B. Nason.		53 State Street.
Hamilton, William Pierson.	J. P. Morgan & Co.	Drexel Building, New York.
Harding, Theodore P.		53 State Street.
Harris, George B.	Blake Bros. & Co.	28 State Street.
Harris, William P.	Harris & Co.	53 State Street.
Hastings, Theodore.		53 State Street.
Hawes, William C.		New Bedford, Mass.
*Hayden, Charles.	Hayden, Stone & Co.	87 Milk Street.
Hayes, Bartlett H.		87 Milk Street.
*Head, Charles.	Charles Head & Co.	74 State Street.
Heath, Nathaniel.		53 State Street.
*Higginson, Henry L.	Lee, Higginson & Co.	44 State Street.
Hill, William H.	Richardson, Hill & Co.	40 Water Street.
Hornblower, Henry.	Hornblower & Weeks.	53 State Street.
Horne, Edward B.	With W. Waldo Merrill & Co.	53 State Street.
Horton, Edward M.	Ely & Co.	28 State Street.
Howe, Fisher.	Fisher Howe & Co.	53 State Street.
Hubbard, Jesse B.	With Towle & Fitzgerald.	18 Post Office Square.
Hovey, Frederick H.		87 Milk Street.
Jackson, Charles C.	Jackson & Curtis.	15 Congress Street.
Jackson, Walter.	Francis Henshaw & Co.	97 Milk Street.
Kimball, Edward R.	E. R. Kimball & Co.	Delta Building, 10 Post Office Square
Kinnicutt, Lincoln N.	Kinnicutt & De Witt.	Worcester, Mass.
Legg, Charles E.	C. E. Legg & Co.	53 State Street.
Leland, Herbert M.	Arthur S. Leland & Co.	Delta Building, 10 Post Office Square
Long, Harry V.	Charles Head & Co.	74 State Street.
Lord, George F.	Lord & Mandell.	53 State Street.
*Loring, Homer.	S. D. Loring & Son.	64 Devonshire Street.
*Mackay, Donald.	Vermilye & Co.	13 Congress Street.
Merrill, W. Waldo.	W. Waldo Merrill & Co.	53 State Street.
Merritt, Edward P.	Blodget, Merritt & Co.	16 Congress Street.
Middleton, Walter D.	C. A. Putnam & Co.	53 State Street.
Mills, Charles R.		40 Water Street.
Mitchell, Henry.	Mitchell, Knapp & Co.	53 State Street.

NAME.	FIRM.	OFFICE.
Morse, Edward W.	With Kidder, Peabody & Co.	115 Devonshire Street.
*Morse, E. Rollins.	E. Rollins Morse & Bro.	43 State Street.
*Moseley, Charles W.	John Pickering & Moseley.	Union Building, 40 State Street.
Moseley, Frederick S.	F. S. Moseley & Co.	35 Congress Street.
Mudge, Frank N.		53 State Street.
Neilon, William T.	Keveney & Neilon.	54 Devonshire Street.
Paine, William A.	Paine, Webber & Co.	27 State Street.
Parker, Charles L.	With Lee, Higginson & Co.	44 State Street.
Parker, Frederick W.	Clement, Parker & Co.	53 Devonshire Street.
Parkinson, John.	Parkinson & Burr.	53 State Street.
Peabody, Frank E.	Kidder, Peabody & Co.	115 Devonshire Street.
*Pearmain, Sumner B.	Pearmain & Brooks.	53 State Street.
Pecker, Edward E.		19 Milk Street.
Peters, Morris A.	Peters & Sewall.	Sears Building.
Pettigrew, John.		60 State Street.
Phelan, James J.	Hornblower & Weeks.	53 State Street.
Phillips, Walter B.		53 State Street.
Pierce, Dean.		53 State Street.
Pitman, H. A.		53 State Street.
Poor, Harris O.		53 State Street.
Potter, Albert B.	A. B. Turner & Bro.	53 State Street.
Presson, Charles B.		20 Central Street.
*Prince, Frederick H.	F. H. Prince & Co.	14 State Street.
Purinton, Charles S.	Charles S. Purinton & Co.	Delta Building, 10 Post Office Square
Putnam, Webster F.	W. F. Putnam & Co.	20 Water Street.
Remick, Frank W.	With Kidder, Peabody & Co.	115 Devonshire Street.
Rhodes, John B.		25 State Street.
Rice, George T.	With Jackson & Curtis.	15 Congress Street.
Rich, George A.		105 Devonshire Street.
Riley, William J.	Brown, Riley & Co.	20 Congress Street.
Robbins, Charles L.		53 State Street.
Rogers, William B.		43 State Street.
Rose, Sheafe C.	Sheafe C. Rose & Co.	53 State Street.
Sanford, Gardner T.	Sanford & Kelley.	21 Pleasant Street, New Bedford, Mass.
Sargent, Arthur H.	Sargent & Fairchild.	126 State Street.
Schirmer, Frank A.	Armstrong, Schirmer & Co.	146 Devonshire Street.
Seabury, William H.	Frank Seabury & Brother.	66 State Street.

NAME.	FIRM.	OFFICE.
Stearns, Harris B.	H. B. Stearns & Co.	53 State Street.
Stearns, William B.	With Kidder, Peabody & Co.	115 Devonshire Street.
Stowell, H. B.	J. B. Stowell & Son.	82 Devonshire Street.
Sullivan, James.	Charles Head & Co.	74 State Street.
Sweet, Charles E.	With Estabrook & Co.	35 Congress Street.
Sweetser, Arthur L.	A. L. Sweetser & Co.	53 State Street.
Tewksbury, Charles W.	Charles W. Tewksbury & Son.	27 Kilby Street.
Tilton, Barclay.	Office of Edgerly & Crocker.	53 State Street.
Topliff, G. Francis.		60 Devonshire Street.
Tower, Richard G.	Tower, Giddings & Co.	105 Devonshire Street.
*Towle, George Napier	Towle & Fitzgerald.	18 Post Office Square.
Tucker, Frederick M.	F. M. Tucker & Co.	60 State Street.
Tucker, Tracey H.	F. M. Tucker & Co.	60 State Street.
Tucker, W. A.	Tucker, Anthony & Co.	53 State Street.
Wainwright, Henry.	H. C. Wainwright & Co.	40 State Street.
Welch, Francis W.	With Hayden, Stone & Co.	87 Milk Street.
White, Harry K.	Lee, Higginson & Co.	44 State Street.
Wiggin, Russell B.	Wiggin & Elwell.	53 State Street.
Williams, G. Percy.		Sears Building.
Williston, James R.	J. R. Williston & Co.	19 Congress Street.
Woodworth, Arthur V.		53 State Street.
Wrenn, Philip W.	Wrenn Bros. & Co.	Board of Trade Building.

LONDON QUOTATIONS AND EQUIVALENTS.

London prices of copper and the equivalents in United States currency, with the rate of exchange to the pound sterling, as indicated below. The usual discount of 2½ per cent. deducted from price of copper in London, is equal to sixpence per pound sterling, but the discount is not deducted from these calculations:

RATE OF EXCHANGE, $4.85.

Price per ton of 2240 lbs. London.	Equal to price per lb. U. S. currency. Cents.	Price per ton of 2240 lbs. London.	Equal to price per lb. U. S. currency. Cents.
£38	8.22	£64	13.85
39	8.44	65	14.07
40	8.66	66	14.29
41	8.87	67	14.50
42	9.09	68	14.72
43	9.31	69	14.93
44	9.52	70	15.15
45	9.74	71	15.37
46	9.95	72	15.58
47	10.17	73	15.80
48	10.39	74	16.02
49	10.60	75	16.23
50	10.82	76	16.45
51	11.04	77	16.67
52	11.25	78	16.88
53	11.47	79	17.10
54	11.69	80	17.32
55	11.90	81	17.53
56	12.12	82	17.75
57	12.34	83	17.97
58	12.55	84	18.18
59	12.77	85	18.40
60	12.99	86	18.62
61	13.20	87	18.83
62	13.42	88	19.05
63	13.64	89	19.27

LONDON QUOTATIONS AND EQUIVALENTS.—CONTINUED.

Price per ton of 2,240 lbs. London.	Equal to price per lb. U. S. currency. Cents.	Price per ton of 2,240 lbs. London.	Equal to price per lb. U. S. currency. Cents.
£90	19.48	£126	27.28
91	19.70	127	27.49
92	19.92	128	27.71
93	20.13	129	27.93
94	20.35	130	28.14
95	20.56	131	28.36
96	20.78	132	28.58
97	21.00	133	28.79
98	21.21	134	29.01
99	21.43	135	29.22
100	21.65	136	29.44
101	21.86	137	29.66
102	22.08	138	29.87
103	22.30	139	30.09
104	22.51	140	30.31
105	22.73	141	30.52
106	22.95	142	30.74
107	23.16	143	30.96
108	23.38	144	31.17
109	23.60	145	31.39
110	23.81	146	31.61
111	24.03	147	31.82
112	24.25	148	32.04
113	24.46	149	32.26
114	24.68	150	32.47
115	24.89	151	32.69
116	25.11	152	32.91
117	25.33	153	33.12
118	25.54	154	33.34
119	25.76	155	33.55
120	25.98	156	33.77
121	26.19	157	33.99
122	26.41	158	34.20
123	26.63	159	34.42
124	26.84	160	34.64
125	27.06		

EUROPEAN COPPER STATISTICS—IN TONS OF 2,240 POUNDS.

	1903.			
Month.	Supplies during month.	*Deliveries during month.	Visible supply at end of month.	Price at end of month.
January	18,919	20,328	15,131	£54 15 0
February	20,672	22,331	13,472	59 0 0
March	21,271	20,359	14,384	64 0 0
April	26,855	25,241	15,998	60 10 0
May	20,957	21,191	15,764	59 5 0
June	18,832	19,293	15,303	58 0 0
July	19,145	19,499	14,949	57 7 6
August	19,652	18,889	15,712	58 7 6
September	22,500	22,958	15,254	55 2 6
October	22,774	23,197	14,831	59 5 0
November	—	—	—	—
December	—	—	—	—
Totals	—	—		

	1902.			
Month.	Supplies during month.	*Deliveries during month.	Visible supply at end of month.	Price at end of month.
January	20,415	19,154	23,312	£55 15 0
February	25,762	25,501	23,573	55 12 6
March	29,145	24,594	28,124	52 15 0
April	28,026	29,139	27,011	52 0 0
May	22,968	25,715	24,264	54 5 0
June	26,702	27,747	23,219	52 7 6
July	28,274	30,180	21,313	53 0 0
August	18,203	19,241	20,275	51 7 6
September	23,434	26,464	17,245	52 0 0
October	20,953	21,541	16,657	51 17 6
November	22,597	22,547	16,707	49 15 0
December	22,082	22,249	16,540	52 12 6
Totals	288,561	294,072		

EUROPEAN COPPER STATISTICS—Continued.

1901.

Month.	Supplies during month.	*Deliveries during month.	Visible supply at end of month.	Price at end of month.
January	17,828	17,784	28,904	£71 2 6
February	19,907	19,816	28,995	70 12 6
March	16,536	17,300	28,231	69 7 6
April	16,700	17,396	27,535	69 12 6
May	22,609	22,913	27,231	69 7 6
June	21.415	21,184	27,462	67 17 6
July	21,943	22,010	27,395	67 10 0
August	19,296	20,870	25,821	66 10 0
September ...	16,043	17,099	24,765	63 7 6
October	17,852	21,652	20,965	64 17 6
November	17,623	18,018	20,570	60 0 0
December	20,169	18,688	22,051	48 15 0
Totals	227,921	234,730		

1900.

Month.	Supplies during month.	*Deliveries during month.	Visible supply at end of month.	Price at end of month.
January	19,267	20,757	21,327	£71 5 0
February	23,272	21,617	22.982	74 15 0
March	25,421	23.771	24,632	78·12 6
April	27,155	24,312	27,475	76 15 0
May	25,240	23,511	29,204	73 5 0
June	26,870	26,811	29,263	71 15 0
July	21.226	21,576	28,913	73 0 0
August	26,940	25,678	30.175	73 0 0
September ...	19,521	20,563	29.133	72 12 6
October	22,703	23,024	28,812	72 0 0
November	23,488	23,078	29,222	72 10 0
December	19,274	19,636	28,860	72 17 6
Totals	280,377	274,334		

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*Shipments of "Standard" copper to America included.

NEW ENGLAND AND CLIFTON CONSOLIDATED COPPER COMPANY.

The stockholders of the New England Copper Company of Arizona met October 22, 1903, to consider the proposed consolidation between the Clifton Consolidated Copper Mines and the New England Copper Company by a transfer to a new corporation recently organized. The proposition was agreed to.

The new company into which the two former companies have been merged is named the New England and Clifton Consolidated Copper Company, and the capitalization is $2,000,000 preferred and $3,000,000 common; $1,000,000 preferred and $2,500,000 common is distributed amongst the stockholders of the old companies; $300,000 preferred and $150,000 common is used for the raising of $250,000 working capital, and $700,000 preferred and $350,000 common remain in the treasury.

There has been subscribed and underwritten to the new company $250,000 quick capital. Mr. E. Rollins Morse has formed a syndicate, underwriting $125,000, and Mr. R. A. Demme, President of the Clifton Consolidated Copper Mines of Arizona, has underwritten the other $125,000.

It is expected that probably two directors will be taken from each of the old companies, and that Mr. E. Rollins Morse shall probably act as a fifth and be the President. The properties of the consolidated companies are located in Arizona, and are regarded as valuable and promising.

The amount of development work done at this property up to date of November 7, 1903, was as follows: On main lead, 2,600 feet; shafts and winzes, 9,080 feet; tunnels and cross cuts on other claims, 1,450 feet; backing above sixth level, 1,100 feet; deepest shaft, 800 feet.

AMALGAMATED COPPER MINES.

A decision was rendered by a Montana judge on October 22, 1903, whereby a previously issued restraining order prohibiting the transfer of the stock of the Boston and Montana Company to the Amalgamated, and prohibiting the payment of dividends on Boston and Montana stock, was made an injunction.

On the announcement of this decision the mines of the Amalgamated Copper Company were closed down. The suspension of operations at so many of the principal copper mines in Montana created an uneasy feeling in the trade, and considerable excitement in the London market especially. The price of copper advanced in a few days about a cent per pound here, and £5 7s. 6d. per ton in London.

The miners and populace at the great copper camp in Butte were intensely stirred up over the sudden cessation of operations at mines and smelters, and attempts were made by leading citizens of the State to harmonize matters and fix on some plan which would permit resumption of work at the different plants.

On November 10, 1903, it was announced that Gov. Toole of Montana had agreed to summon a special session of the Legislature on December 1, 1903, with a view to the enactment of what is called "a fair trial bill," providing for the removal of any case from any court where bias or prejudice could be shown on the part of the judge. Following this action on the part of the Governor, orders were issued on the same date to resume operations at all of the mines and smelters. What subsequent developments will be time will tell. It would be a fortunate thing for all concerned if the intricate and expensive litigation in which various Montana interests are mixed up could be amicably terminated. All things sublunary will have an end some time, and doubtless the vexatious copper mining litigation will come to an end also. The question is, when and how?

LAKE SUPERIOR COPPER MINES.

The annual report of Mine Inspector Josiah Hall, at Michigan, for the year ending September 30, 1903, shows the number of men employed at the various copper mines in Houghton County were 13,629. The fatalities underground numbered 31, on the surface 2, making a total of 33 fatal accidents. There were also 8 non-fatal accidents reported. The number of men working at the mines in 1902 were 14,130; in 1901, 13,498; in 1900, 13,971; in 1899, 13,051. In 1895 the total number of men employed in the mines of Houghton County were 7,249.

IMPORTS OF COPPER INTO THE UNITED STATES, 1903.

Imports of ores, matte and regulus, reduced to fine copper, as follows:

1903.	*Tons.*
January	6,424
February	5.011
March	5,640
April	6,160
May	7.050
June	5,810
July	6.290
August	6.430
September	6.048
October (est.)	6,000
Total, 10 months	60,863

Total imports during year 1902 per Metal Exchange returns were 74,927 tons; in 1901, 61,286 tons; in 1900, 38,182 tons; in 1899. 39,858 tons; in 1898, 12,900 tons.

MINES IN MONTANA BEING A DEPTH OF OVER FIVE HUNDRED FEET.

Name of mine.	Depth. Feet.	Name of mine.	Depth. Feet.
Anaconda	1,800	Diamond	2.200
St. Lawrence	1.885	Green Mountain	2,200
Never Sweat	2,000	Mountain Consol. No. 1	2.200
High Ore	2,200	Mountain Consol. No. 2	1.500
Bell	1,800	Buffalo	1,600
Little Minah	800	Moonlight	1,300
Parrot	1,600	Pennsylvania	1,500
Mountain View	1,800	Leonard	1,200
West Colusa	1,400	Gagnon	1.800
East Colusa	900	East Grey Rock	700
Silver Bow No. 1	1.000	West Cora	900
Silver Bow No. 2	700	East Cora	1,500
Blue Jay	1.075	Colusa-Parrot	1.400
Berkley	900	East Stewart	1.300
Rarus	1,300	West Stewart	1.100
Nipper	800	Alice	1,500
Minnie Healey	800	Blue Wing	650
Speculator	1,400	Hope	550

CONSUMPTION OF COPPER IN ENGLAND.

FIRST TEN MONTHS OF 1903.—IN TONS OF 2,240 POUNDS.

Returns for the first ten months of 1903 show the consumption and movement of copper in England, compared with the same period in previous years:

	1903.	1902.	1901.	1900.
Imports from U. S.	16,286	40,675	17,078	27,523
Imports from other countries	96,717	95,923	106,686	104,122
Total imports	113,003	136,598	123,764	131,655
Exports from England—				
Manufactured	21,245	19,094	13,620	13,346
Unmanufact'r'd	29,988	40,578	44,026	35,783
Sulphate	12,695	10,176	8,768	9,928
	63,928	69,848	66,414	59,057
Difference	49,075	66,750	57,350	72.598
Difference in stocks	*4.037	*3,904	*7,359	†4,960
Consumption	53,112	70,654	64,709	67,638

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*Decrease. †Increase.

CONSUMPTION OF COPPER IN GERMANY.

FIRST NINE MONTHS OF 1903.—IN TONS OF 2,240 POUNDS.

	1903.	1902.	1901.	1900.
Imports from England	6,872	7,058	5,740	7,736
Imports from United States	46,573	46,319	33,353	50,972
Imports from other countries	10,082	8,714	9,662	9,073
Total imports	63,527	62,091	48,755	67,781
Exports	7,797	6,718	7,233	8,406
Consumption of foreign copper (pyrites excluded)	55,730	55,373	41,522	59,375

CONSUMPTION OF COPPER IN FRANCE.

FIRST TEN MONTHS OF 1903.—IN TONS OF 2,240 POUNDS.

	1903.	1902.	1901.	1900.
Imports from United States..	18,108	25,336	13,513	25,400
Imports from England.......	2,843	3,598	3,354	2,056
Imports from other countries.	16,037	12,354	15,176	11,548
Total imports.............	36,988	41,288	32,043	39,004
Exported	312	160	250	1,900
Difference in stocks..........	†253	*265	*2,336	†685
Consumption	36,423	41,393	34,129	36,419

*Decrease. †Increase.

LAKE SUPERIOR COPPER OUTPUT FOR FIRST NINE MONTHS OF 1903.

AS PER APPROXIMATE RETURNS.

In pounds of refined copper.

(Some of the figures are the exact actual returns.)

Mine.	First six months, 1903.	July, 1903.	August, 1903.	September, 1903.	First nine months, 1903.
Cal. & Hecla.	40,900,000	6,500,000	6,400,000	6,400,000	60,200,000
Quincy	8,886,356	1,467,719	1,514,679	1,480,000	13,348.758
Tamarack ..	7,163,000	1,000,000	930,000	1,100,000	10,193,000
Osceola	6,565.000	1,374,000	1,480,000	1,620,000	11,039,000
Champion ..	5,227,500	1,076,000	1,048,000	1,056.000	8,407,500
Baltic	4,854,451	994,198	935,088	949,267	7,733,004
Wolverine ..	4,310,403	783,993	800,915	763,755	6,659,066
Trimountain .	5,300,000	840,000	880,000	835,000	7,855,000
Franklin ...	2,723,366	466.500	454,000	340,000	3,983.866
Mohawk	3,201,420	566,816	489,968	528,035	4,786,239
Atlantic	2,703.099	445.360	424,962	488,101	4,061,522
Mass.	1,355,200	270.000	270,000	290,000	2.185,200
Adventure ..	1,372,775	290,000	290,000	200,000	2,152,775
Isle Royale..	1,242,000	314,000	350,000	330,000	2,236,000
Winona	678,718	61,456	80,000	56,000	876,174
Other sources	195,000	......	......	......	195,000
Total	96,678,288	16,450,042	16,347,612	16,436,158	145,912,104

MARKET PRICES OF COPPER MINING SHARES FOR SEPTEMBER, 1903.

Highest and lowest prices of copper mining shares at the Boston Stock Exchange during the month of September, 1903:

Name of company.	Highest.	Lowest.	Name of company.	Highest.	Lowest.
Adventure	6	4¾	Montreal & Boston	1	75c.
Amalgamated	50	37½	Old Dominion.....	10¾	6
Arcadian	1½	75c.	Osceola	61	50
Atlantic	9	8	Parrot	21½	17½
Bingham	26⅜	20¾	Quincy	95	85
Calumet & Hecla..	475	425	Santa Fe.........	1⅜	1
Centennial	20¾	14¾	Tamarack	113	81
Copper Range Cons	66¾	45¼	Trimountain	77	70
Daly West.........	42¾	38	Trinity	7½	5½
Franklin	8¾	8	Utah Cons........	28	23½
Isle Royale.......	7½	5⅝	U. S. Mining......	20½	17¼
Mass Mining......	5½	5	Victoria	4	3
Michigan	8⅞	6	Winona	8½	6
Mohawk	43¾	37	Wolverine	74	62½

IMPORTS OF COPPER INTO THE UNITED STATES.

Imports of copper into the United States are reported as follows, in tons of 2,240 pounds:

	Tons.
September, 1903	6.048
Previous eight months..................................	48,815
Total first nine months, 1903.........................	54,863
Imports first nine months, 1902..........................	54,778

IMPORTS OF COPPER INTO THE UNITED STATES DURING SEPTEMBER, 1903.

Districts.	Ore Matte and Regulus. Tons gross.	Pounds copper contents.	Dollars.
Baltimore	84	5,040	504
Boston	....	......	....
New York	19,598	1,514,224	57,119
Philadelphia	....	......	....
Arizona	8	12,571	1,509
Corpus Christi	87	107.025	13,421
Paso del Norte	228	24.220	2,422
Puget Sound	16,043	1,051,674	106,941
Champlain	....	......	....
Detroit	....	......	....
Memphremagog	37	41,733	1,669
North & South Dakota	....	......	....
Oswegatchie	17	9,134	802
Vermont	....	......	....
Total	36,102	2,765,621	184,387

Districts.	Pigs, Bars, etc. Pounds.	Dollars.
Baltimore	1,686,823	293,211
Boston	4.742	515
New York	2,892,191	344,268
Philadelphia	1,792,646	227,016
Arizona	4,138,878	498,666
Corpus Christi	......	......
Paso del Norte	......	......
Puget Sound	3,880	331
Champlain	1,410	150
Detroit	426	26
Memphremagog	......	......
North & South Dakota	1,364,382	149,549
Oswegatchie	......	......
Vermont	1,000	100
Total	11,886,378	1,513,832

DIVIDENDS BY COPPER COMPANIES PAID JANUARY 1, 1903, TO DECEMBER 1, 1903, AND TOTAL DIVIDENDS PAID.

Name of company.	*Dividends paid. Jan. 1, '03, to Dec. 1, '03.*	*Total dividends paid to Dec. 1, 1903.*
Amalgamated	*$3,100,000	*$22,900,000
Anaconda	1,200,000	23,250,000
[a] Atlantic	....	940,000
Boston and Montana	1.200,000	28,325,000
[b] Butte and Boston	....	1,600,000
Calumet and Hecla	2,500,000	82.350,000
Daly-West	1,098,000	3,357,000
Greene Consolidated	432,000	652,000
Montana Ore P. Co	646,656	3,132,300
Mountain Copper Co	142,500	3,776,250
[c] Osceola	....	4,247.300
[d] Parrot	....	5,772,925
Quincy	550,000	14,120,000
[e] Tamarack	....	8,490,000
Tennessee	218,750	218,750
Trimountain	300.000	300,000
United Verde	1,575,000	14,610,322
United Copper Co	300,000	450,000
Utah Consolidated	960,000	1,692,000
Wolverine	330,000	1,320,000
Total	$14,552,906	$221,503,847

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* Less the amount on unissued shares. [a] Last dividend Feb., 1901. [b] Last dividend Nov., 1901. [c] Last dividend Dec., 1901. [d] Last dividend Jan., 1902. [e] Last dividend Dec., 1901.

MARKET PRICES OF COPPER MINING SHARES ON THE BOSTON STOCK EXCHANGE.

Company.	*Month of October,* 1903. *Highest.*	*Month of October,* 1903. *Lowest.*	*First half of November,* 1903. *Highest.*	*First half of November,* 1903. *Lowest.*
Adventure	5	3	5	4
Amalgamated	42⅜	33¾	40	35½
Arcadian	1	75	1	87½
Atlantic	8¾	7	8½	8
Bingham	24⅜	20½	23	21
Calumet and Hecla	470	425	450	430
Centennial	18¾	14¼	17	14¼
Copper Range Cons	51½	42	47½	43½
Daly-West	40½	37	38	34
Franklin	8	7	8¼	7¼
Isle Royale	7½	5¼	6½	5⅛
Mass	5	4⅛	5	4½
Michigan	7¼	6	7	6½
Mohawk	40⅝	35	38	33
Montreal and Boston	.75	.75	.70	.60
Old Dominion	14	5	12	9
Osceola	63	51	58½	55
Parrot	19⅝	16	19¼	18
Quincy	96	80	90	85
Santa Fe	2½	2¼	2⅛	1½
Tamarack	109	75	97½	85
Trinity	6⅛	5	5½	5
Utah Cons.	29½	24	28	26¼
U. S. Mining	19	16½	18¼	17⅛
Victoria	3½	2 7-16	3	2½
Winona	9	6	8½	7⅝
Wolverine	70	62¾	66	64

LAKE SUPERIOR COPPER PRODUCTION.

The following figures of output are partly official and partly estimated. In pounds of refined copper.

First Ten Months of 1903.

Company.	*October,* 1903.	*September,* 1903.	*August,* 1903	*First* 10 *mos.,* 1903
Calumet & Hecla...	6.000.000	6.400,000	6.400.000	66.200,000
Quincy	1.500.000	1.525.915	1.514.679	14,894,669
Tamarack	1,100.000	1,100,000	930.000	11,293.000
Osceola	1.500,000	1.620,000	1.480.000	12,539,000
Champion	1,097,330	1,056.000	1,048,000	9.504.330
Baltic	1,005.058	949,267	935,088	8,738,062
Trimountain	846.000	835.000	880,000	8.701,000
Wolverine	787,745	763.755	800,915	7.446.801
Mohawk	517.687	528,035	489,968	4,775,891
Atlantic	459.831	488,101	424,962	4,521.353
Franklin	490.625	393.307	428.828	4,478,422
Adventure	190.000	200,000	290.000	2.258,775
Mass	250.000	290.000	270.000	2,435.200
Isle Royale	330.000	330,000	350.000	2.258.775
Winona	50.000	48.414	45.665	838.588
Total	16.124,276	16,527,794	16.288,105	160,883.866

The total production of Lake Copper for the year 1902 was 169,616,614 pounds, and that for the year 1901 was 147,189,606 pounds.

MONTANA COPPER MINES.

The total number of men employed in the metalliferous mines of Montana in 1902 were 13,784. The fatal accidents numbered 47 and the non-fatal accidents 45, making a total of 92. The number of men employed in 1901 were 12,078; in 1900, 13,996; in 1899, 12,316; in 1898, 11,096; in 1897, 9,825; in 1896, 7,727; in 1895, 8,758; in 1894, 7,082; in 1893, 5,312.

UNION COPPER MINING COMPANY.

This company is incorporated for $3,000,000, divided into 300,000 shares of $10 each. The property is located two miles from Gold Hill, N. C., and 15 miles from Salisbury, N. C.

For several months development work only has been done. Our information is that the main shaft is being sunk below the seventh level. At the sixth level rich ore was reported, and the same at the seventh level, showing improvement in quality. The development of the mine is being pushed, and rich ore in the lower levels is in sight, as per statements received in April, 1903.

Officers of the Company are:

CALVIN H. ALLEN, *President.*
THOS. C. BUCK, *Treasurer.*
TEMPLE T. BERDAN, *Secretary.*

Directors:

CALVIN H. ALLEN,
THOS. C. BUCK,
TEMPLE T. BERDAN,
VERNON C. BROWN,
ROBERT P. DOREMUS,
WM. M. BUTLER,
JACOB FIELD,
JOHN L. DRUMMOND,
ANDREW FLETCHER, Jr.

Office, 11 Broadway, New York.

EXPORTS OF SULPHATE OF COPPER FROM THE UNITED STATES.

Exports of sulphate of copper from the United States were as follows, in tons of 2,240 pounds:

	1903. Tons.	1902. Tons.
September	50	79
Previous eight months	7,706	13,218
Total, nine months	7,756	13,297

EUROPEAN COPPER PRODUCTION.

The production of copper by the foreign reporting mines, as per the official figures of the Copper Producers' Association, was as follows, in tons of 2.240 pounds fine:

Month.	1892.	Month.	1892.
*July	6,358	December	7,666
August	6,888		
September	5,478	Total six months	39,655
October	6,476		
November	6,789		

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* Statistics began to be published in July, 1892.

Month.	1893.	1894.	1895.
January	5,736	8,145	6,737
February	6,762	7,217	6,739
March	6,896	6,922	7,424
April	6,913	7,385	7,219
May	6,806	8,013	7,400
June	7,935	7,611	6,965
July	6.095	6,960	6,988
August	7,057	7,367	7,129
September	6.303	7,110	6,947
October	7,081	7,231	7,753
November	6,953	6,964	7,728
December	7.248	7,606	7,149
Total twelve months	81,785	88,531	86,178

Month.	1896.	1897.	1898.
January	6,834	6,595	5,556
February	7,096	7,241	7,303
March	6,910	8,358	7,121
April	6,865	7,318	6,824
May	7,495	7,116	6,488
June	7,055	7.635	7,588
July	7,847	7.327	6,794
August	7,022	6,963	6,909
September	7,182	7,541	7,122
October	7,297	7,108	7,332
November	7.108	7,073	7,080
December	7,685	7,995	8,436
Total twelve months	86,396	88,270	84,554

Month.	1899.	1900.	1901.	1902.
January	5,852	5,868	5,910	7,367
February	7,399	7,241	7,332	8,475
March	8,077	7,544	7,817	8.979
April	7,911	7,352	8,810	10,169
May	7,355	8,293	8.456	9,354
June	7,035	6,855	8,522	8,202
July	7,390	7,433	9,254	9,210
August	7,292	7,535	8,180	9,504
September	7,839	7,145	9,477	9.155
October	7,834	7,920	8,960	9,707
November	7,896	7,752	8,846	9,077
December	7,360	8,483	8,677	9,676
Total 12 months	89,240	89,421	100,241	108,875

COPPER NOTES.

Under the heading of "Copper Notes" we are able to insert a number of interesting and important items of information available shortly before going to press.

CALUMET & HECLA MINING COMPANY.

The directors of the Calumet & Hecla Mining Company met on November 23, 1903, and declared a dividend of $10 per share, payable December 22, 1903. The dividends declared during the calendar year 1903 were as follows:

$5 per share, payable March 10, 1903.	$500,000
10 per share, payable June 19, 1903..	1,000,000
10 per share, payable Sept. 24, 1903..	1,000,000
10 per share, payable Dec. 22, 1903...	1,000,000
Total in 1903, $35 per share	$3,500,000

The total dividend disbursements to stockholders aggregate $83,350,000. The total production of the Calumet & Hecla Mining Company for the first ten months of 1903 is estimated at 66,200,000 pounds of refined copper.

HELVETIA COPPER COMPANY.

A new company, called the Michigan & Arizona Development Company, has been organized for the purpose of reopening the Helvetia Mines in Arizona, and operations have already begun. The new development company has

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ASTOR LENOX AND
TILDEN FOUNDATIONS.

NEW MACHINE SHOP QUINCY MINING COMPANY.

secured an option on a large part of the old Helvetia stock, and has agreed to spend at least $50,000 in carrying down the old shafts to a depth of 1,000 feet, with an idea of explorating in the blue limestone, where the values of the Calumet & Arizona Company in the Bisbee district have been developed. Operations will be in charge of Mr. F. B. Close, who was superintendent of the old Helvetia Copper Company.

QUINCY MINING COMPANY.

The production of the Quincy Mining Company during the first ten months of 1903 in refined copper was as follows:

1903.	Pounds fine.
January	1,506,312
February	1,514,276
March	1,495,371
April	1,451,093
May	1,475,770
June	1,443,534
July	1.467,719
August	1,514,679
September	1,525.915
October	1,537,044
Total ten months	14,931,713

The total production of the Quincy Mining Company for the calendar year 1902 was 18,988,491 pounds of refined copper, and that for 1901 was 20,540,720 pounds of refined copper.

MICHIGAN COPPER MINING COMPANY.

The Michigan Mine began to ship rock to the Mass stamp mill in November, 1903. One stamp head at the

Mass mill will operate on Michigan product. The capacity of the single head is 500 tons of rock per day. The Michigan is well opened up, and is expected to maintain a regular production. An assessment of $1 per share has been called payable December 21, 1903.

BALTIC MINING COMPANY.

The production of the Baltic Mining Company for the first ten months of 1903 in refined copper was as follows, as per official returns:

1903.	Pounds fine.
January	682,052
February	689,318
March	928,279
April	828,652
May	889,832
June	836,318
July	994,198
August	935,088
September	949,267
October	1,005,058
Total ten months	8,738,062

The total production of the Baltic Mining Company for the calendar year 1902 was 6,285,819 pounds of refined copper, and that for 1901 was 2,641,432 pounds of refined copper.

CALUMET & ARIZONA MINING COMPANY.

This company declared its first regular dividend of $1.50 per share and an extra dividend of 50 cents per share, payable December 19, 1903.

The production of the Calumet & Arizona Mining Company for the first ten months of 1903, as per official returns, was as follows, in fine copper:

1903.	Pounds fine.
January	1,546,593
February	1,484,862
March	1,311,258
April	1,802,119
May	2,062,420
June	2,075,705
July	*2,171,739
August	*2,678,571
September	*2,530,349
October	*2,538,000
Total ten months	20,201,616

*Blister copper.

The company's smelter was started November 15, 1902.

VICTORIA COPPER MINING COMPANY.

In the latter part of November, 1903, the Victoria Mine was reported in good shape and the directors planning for the erection of a two-head stamp mill. The twenty-first level has been reached, and the lode is said to look better the deeper it is exposed.

UTAH CONSOLIDATED MINING COMPANY.

The following are the dividends paid by the Utah Consolidated Mining Company:

April, 1901, $1.22 per share	$366,000
December, 1901, $1.22 per share	366,000
January, 1903, $1.70 per share	510,000
July, 1903, $1.50 per share	450,000
Total dividends	$1,692,000

Another semi-annual dividend of at least $1.50 per share is expected to be declared in December, 1903. The Utah is a splendid property, and is preparing to accomplish important results.

MOHAWK MINING COMPANY.

The production of the Mohawk Mining Company for the first ten months of 1903 was as follows, in refined copper:

1903.	Pounds fine.
January	504,675
February	488,389
March	563,634
April	557,498
May	515,278
June	571,946
July	566,816
August	489,968
September	528,035
October	517,687
Total ten months	5,303,926

The powerful hoist and other equipment were nearly completed at No. 4 shaft the latter part of November, 1903, and the Mohawk output is expected to show material increase in 1904.

DE LAMAR COPPER REFINING COMPANY.

The De Lamar Copper Refining Company has been incorporated, with a capital stock of $2,000,000. The company has a large smelting plant at Cartaret, N. J. The officers are J. R. De Lamar, President; L. Vogelstein, Vice-President, and W. O. Fletcher, Secretary and Treasurer.

SHANNON COPPER COMPANY.

The annual meeting of the Shannon Copper Company was held in Boston on November 27, 1903. The following is the balance sheet of the company as of August 31, 1903:

Assets.	
Mines	$2,599,287.25
Furniture and fixtures	829.63
Mine development and smelter construction and equipment	910,820.99
Supplies at Clifton	90,506.77
Cash, copper and accounts receivable	170,560.44
Total	$3,772,005.08
Liabilities.	
Capital stock	$3,000,000.00
Bonded indebtedness	540,000.00
Accounts payable, not yet due	143,836.12
Profit and loss	88,168.96
Total	$3,772,005.08

During the fiscal year ending August 31, 1903, the company's underground openings amounted to 7,107 feet, or nearly a mile and a half of tunnels, shafts, winzes, etc., and now have about five and one-half miles of underground workings. Enough ore is reported in sight to run the smelting plant for over five years. During the year a contract was let for a 500-ton concentrator designed in two sections. One section has been in operation since March 7, 1903, and the other section is being installed, and expected to go into commission in February, 1904.

COPPER QUEEN CONS. MINING CO.

The total production of the Copper Queen Consolidated Mining Company during the four months of July, August, September and October, 1903, in black copper 99% fine was 11,494,800 pounds.

ATLANTIC MINING COMPANY.

The production of the Atlantic Mining Company for the first ten months of 1903 was as follows, in refined copper:

1903.	Pounds.
January	427,949
February	428,389
March	435,191
April	445,859
May	476,285
June	489,426
July	445,360
August	424,962
September	488,101
October	459,831
Total	4,521,353

The total production by the Atlantic Mine for the year 1902 was 4,949,366 pounds of refined copper, and for 1901 it was 4,666,889 pounds.

EUROPEAN COPPER STATISTICS.—TONS OF 2,240 POUNDS.

Stocks:	Dec. 1, 1903.	June 1, 1903.	Jan. 1. 1903.
Liverpool and Swansea, Chili bars, etc.	820	1,150	2,200
Liverpool and Swansea, other than, and English	3,490	5,680	6,070
London, including landing	500	600	2,000
France	1,600	1,200	1.000
Total stocks	6,410	8,630	11,270
Afloat from Chili	3,300	4,000	3,400
Afloat from Australia	3,100	3,200	1,900
Total visible supply	12,810	15,830	16,570
Supplies, all Europe:			
Total for month	21,000	21,000	22.100
Of which Chili charters	2,600	2,300	3,200
Of which North America	12,900	12,400	11,500
Deliveries, all Europe	23,100	21,200	22,200

UNITED STATES EXPORTS OF COPPER.—PER METAL EXCHANGE RETURNS.

1903.	Tons.
January	10,478
February	8,935
March	12,941
April	13,670
May	9,207
June	8,606
July	8,405
August	10,638
September	12,000
October	13,101
November	14,522
Total eleven months	122,503

The total exports of copper for the first eleven months of 1902 were 153,515 tons.

IMPORTS OF COPPER.

First ten months of 1903 (tons)	61,489
November, 1903, estimated (tons)	6,000
Total eleven months	67,489

GREENE CONSOLIDATED COPPER COMPANY.

The total production of the Greene Consolidated Copper Company for the first ten months of 1903 was 37,196,899 pounds of blister copper 99 per cent fine, 312,000 ounces silver and about 2,000 ounces gold. The November, 1903, output is given at approximately 4,000,000 pounds copper, which would bring the total production for the first eleven months of 1903 to about 41,196,899 pounds of blister copper.

BINGHAM CONSOLIDATED MINING AND SMELTING COMPANY.

Reports of the most recent date regarding the property of the Bingham Company are of a very encouraging nature. President E. L. White and Director John W. Weeks paid a visit of inspection to the mines and smelter in Utah during November, 1903. The smelter was reported doing splendid work, and was smelting and converting copper at a cost said to be well under original estimates. Smelting and converting costs and operations generally at the property are stated to be both economical and efficient, and as the smelter is well supplied with ore and contracts, the company is assured of a tonnage greater than that formerly handled.

The following figures show the output of bullion by the Bingham Consolidated Mining & Smelting Company during the months named:

1903.		
July	702,866	pounds.
August	370,444	"
September	616,354	"
October	481,788	"
Total four months	2,171,452	pounds.

The aggregate production of copper bullion by the Bingham Company for the first ten months of 1903 was 5,705,787 pounds.

WOLVERINE COPPER MINING COMPANY.

Official returns show the following production of refined copper by the Wolverine Copper Mining Company for the first ten months of 1903:

1903.	Pounds fine.
January	735,427
February	678,325
March	697,732
April	694,258
May	714,517
June	790,144
July	783,993
August	800,915
September	763,755
October	787,745
Total ten months	7,446,811

The total production of the Wolverine Copper Mining Company for the calendar year 1902 was 6,473,181 pounds of refined copper, and that for the calendar year 1901 was 4,946,126 pounds of refined copper.

UTAH CONSOLIDATED COMPANY.

It is understood that steps have been taken for the increase in the smelting capacity of the Utah Consolidated, and that the directors at a meeting in October, 1903, voted to authorize the expenditure from earnings of $250,000 for an increase of about 40 per cent. in the capacity of the smelter. The total output of bullion by the Highland Boy for the month of October, 1903, is reported at 1,200,000 pounds. When the smelter capacity is enlarged the Utah Consolidated is expected to materially increase both output and earnings.

OLD DOMINION COPPER MINING & SMELTING COMPANY.

There was a special meeting of Old Dominion stock holders held November 30, 1903. There were 137,827 shares prepared to vote in favor of consolidation with the United Globe, but some opposition to the plan was presented, and the meeting adjourned to meet on December 14, 1903.

PRODUCTION OF LAKE SUPERIOR COPPER MINES.

Production of Lake Superior copper mines for the month of November, 1903, estimated as follows:

Calumet & Hecla—6,500,000 pounds of copper.
Quincy—1,157 tons 385 pounds of mineral.
Tamarack—1,200,000 pounds of copper.
Baltic—622 tons of mineral.
Champion—773 tons of mineral.
Wolverine—510 tons of mineral.
Trimountain—357 tons of copper.
Isle Royale—350,000 pounds of copper.
Mass—250,000 pounds of copper.
Atlantic—345 tons of mineral.
Mohawk—361 tons of mineral.

EXPORTS OF COPPER.

Exports of copper from the United States in November, 1903, were 14,522 tons, being the largest shipments in the month of November since 1898, when they were 14,741 tons. Total exports of copper during the first eleven months of 1903 aggregate 122,213 tons, against 153,515 tons for the first eleven months of 1902, as per Metal Exchange returns.

GRANBY CONSOLIDATED MINING, SMELTING AND POWER COMPANY, LIMITED.

The Granby Company declared its first dividend of one per cent upon the issued capital stock, payable December 16, 1903.

ISLE ROYALE COPPER CO.

The company was reported in November, 1903, to be operating two heads of stamps, and stamping 900 tons of rock daily, producing between 150 and 160 tons of copper per month.

REVIEW AND SUMMARY OF THE COPPER MARKET IN 1903.

1903.

JANUARY.—The year opened with brighter conditions in the copper market on the Lake basis of 12@12¼. The tone was firm, and prices gradually advanced to 12¾@13 cents. Sales were large. London opened at £53 8 9 and closed at £54 13 9 for cash standard.

FEBRUARY.—The selling basis early in the month was about 12¾, and by gradual stages prices rose to 13½@13⅝. A large business was transacted in February. London cash standard advanced from £55 to £58 18 9.

MARCH.—The advancing tendency of the market was the feature. Lake opened firm at 13¾@13⅞, and by the end of the month was quoting 15⅜@15½. Purchases were large. London opened at £59 15 for prompt standard, and closed at £63 15.

APRIL.—There was a firm opening in April on the Lake basis of 15⅜@15½, but in a few days prices receded to 15, with a recovery before the middle of the month to 15¼. An easier tendency developed later, and the month closed quiet at 14¾@15. Orders were in good volume. London standard opened at £64 5 and closed at £60 15.

MAY.—Market held steady throughout May, and did not fluctuate much from 14¾@15. Business comparatively quiet. Standard grades in London opened at £60 5 and closed at £59 10.

JUNE.—A dull market prevailed in June, and prices declined from 14¾@15 at the opening to 14@14¼. London opened at £58, and, after fluctuating both up and down, closed at £58 per ton.

JULY.—Business was only moderate in July. Lake opened at 14@14¼, but on light demand prices fell to 13 cents at the close. London opening was £57 12 6, closing at £57 10.

AUGUST.—Opening quotations in August were 13@13¼ for Lake. The market eased off to 13 cents flat, but before the middle of the month began to improve at 13¼. Later the tone increased in strength, and prices closed at 13¾@13⅞. Heavy sales occurred. London standard opened at £58 and closed at £59.

SEPTEMBER.—The market opened steady at 13¾@13⅞. Sales were in limited volume, and prices eased off to 13⅜@13½. The London market opened at £59 2 6 and closed at £55.

OCTOBER.—The October opening was dull and nominal at 13⅝@13¾. Prices declined to 12⅞ for Lake. Montana mines shut down October 23 on account of a court decision prohibiting transfer of Boston & Montana stock to the Amalgamated Company and the payment of dividends on Boston & Montana stock to Amalgamated. Lake copper advanced to 14 cents, but buyers were conservative. London opened at £54 10 and closed at £59 5.

NOVEMBER.—Lake copper opened at 13¾@14 on a quiet market. There was a gradual decline, and the closing quotations were 12¼@12½. London opened at £59 5 for cash standard, and closed at £54 12 6. The Amalgamated mines started up again on November 11.

DECEMBER.—This review covers only the first few days of December before going to press. The market opened quiet at 12@12¼ for Lake. There have been round lots of Electrolytic sold at 12 cents. The London December opening for cash standard copper was £54 15 per ton.

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